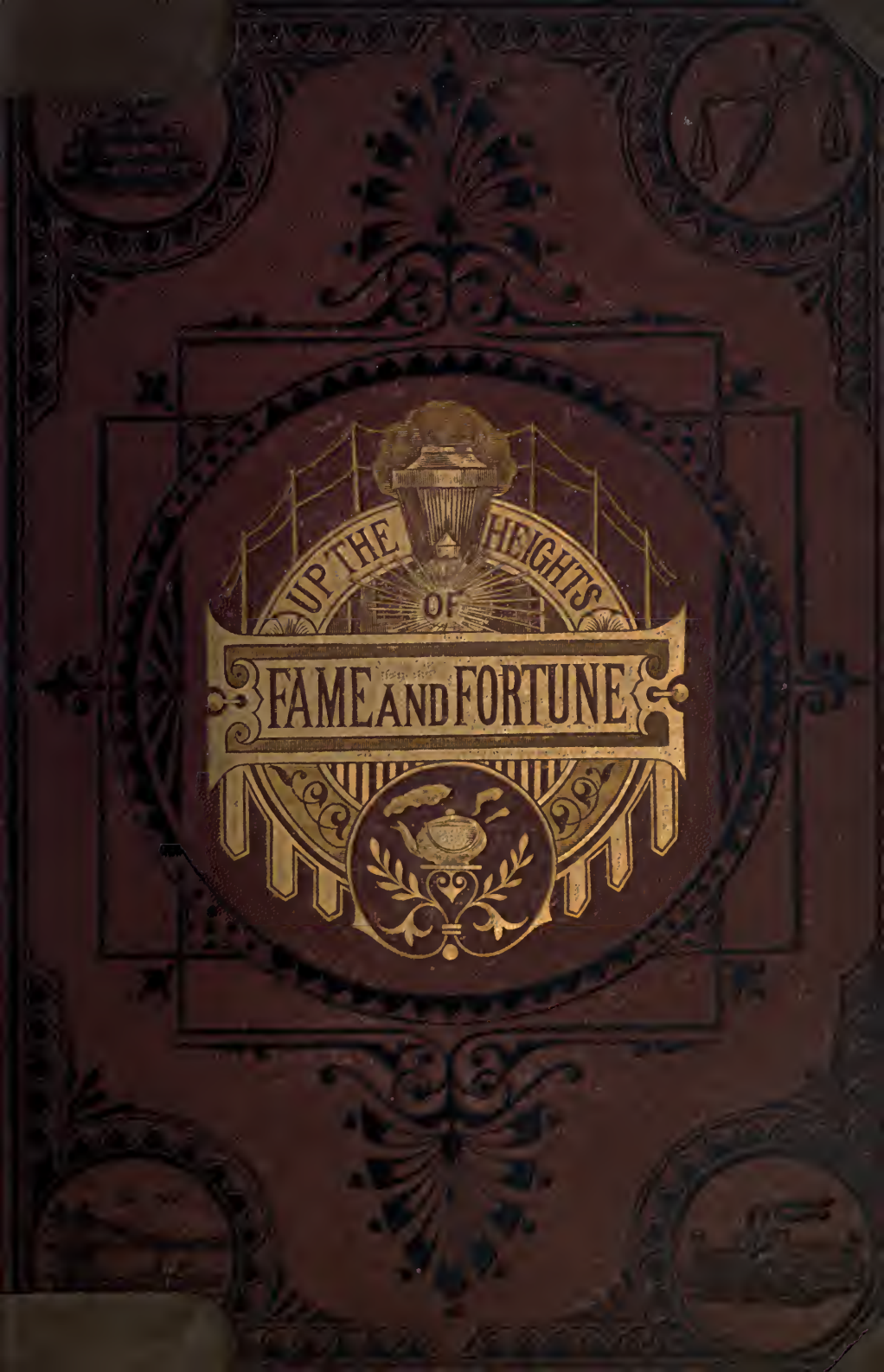

UP THE HEIGHTS
OF
FAME AND FORTUNE

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/upheightsoffamef00readiala

Fame and Fortune

George Peabody

Sam'l F. B. Morse

Eminent Americans

UP THE HEIGHTS

OF

FAME AND FORTUNE,

AND

The Routes Taken by the Climbers

TO BECOME

MEN OF MARK.

EDITED BY
FRED'K BRENT READ.

PUBLISHERS:
WILLIAM H. MOORE & COMPANY,
68 Pearl Street, Cincinnati.
1873.
SOLD TO SUBSCRIBERS ONLY.

Entered according to Act of Congress, in the year 1872, by
WM. H. MOORE & COMPANY,
In the Office of the Librarian of Congress, at Washington, D. C.

STEREOTYPED AT THE FRANKLIN TYPE FOUNDRY, CINCINNATI.

CT
104
P4

LIBRARY
UNIVERSITY OF CALIFORNIA
SANTA BARBARA

PREFACE.

THE present volume is intended for popular reading. It has been prepared with direct reference to supplying a large circle of readers with a fund of practical information of an interesting nature, and of an instructive and elevating character. It has come to be true that information must be compactly given, if it is to be acceptable to any considerable number of people: it is believed that this volume furnishes, in an entertaining series of biographies in PART I, a chain of remarkable facts and events not heretofore grouped together, or otherwise accessible in any available form.

With the decease of Prof. S. F. B. Morse, in April of the present year, culminated the career of the last one of less than a dozen men whose inventions and improvements have changed the industrial, commercial, and social relations of the world. In this work the lives of some of these men are given in nearly chronological order.

A single unit only has been added to the column of centuries, beyond three years for grace, since Watt secured the first patent on his Condensing Engine; and not even a century has passed since Boulton and Watt became partners and began the *manufacture* of Steam-engines: now there are said to be engaged in the manufacturing and labor interests of Great Britain alone a hundred thousand of them, without mentioning Locomotives, or engines employed in navigation. Perhaps three times as many more Steam-engines are employed in other countries. The civilized world may fairly be said to tremble beneath the surging power and groaning thug of iron arms and sinews, propelled by steam.

The dormant power of the coal beds of America, which has awaited the beaming of this high noon of the nineteenth century, is destined to perform an important part in the onward march of events.

The story of the invention and early development of the American Telegraph has never before been told. In the rushing movements of modern life none can tarry to read or listen to long stories: what is done, must be done quickly; and what is said, must be said briefly. Interesting and instructive facts are in demand, but they must be given in short space, and with due consideration for the value of time, now that modern Motors have gone so far toward annihilating both space and time. We can not doubt that the series of events brought to view in the sketches of Morse and Vail, although briefly narrated, will be especially interesting to very many people. The facts are impartially stated, with no purpose but to present the truth.

The later portions of the work, comprised in PARTS II and III, will be found to possess attractions of a different kind—possibly not less desirable, even if in substance less positively material. The sketches in these divisions of the work are certainly as well adapted to mold character and incite to noble aims.

For the essential services rendered by many gentlemen and ladies, residing at widely separated points, who have furnished facts and illustrations, or directed to sources of information, we take pleasure in expressing our obligations.

LINDEN CABIN, *November 7th*, 1872.

CONTENTS.

PART I.

GREAT INVENTORS, ETC.

PAGE.

JAMES WATT, Inventor of the Condensing Engine, . . 9

SIR RICHARD ARKWRIGHT, an Inventor and Improver of Cotton Machinery, ... 21

ELI WHITNEY, Inventor of the Cotton-Gin, etc., . . 27

JOHN FITCH, the Originator and Builder of the first Steamboats, 1785—1790, ... 32

ROBERT FULTON, an Inventor, and the Successful Pioneer in Steam Navigation, ... 57

DANIEL FRENCH, an Inventor who obtained his patent two years before Fulton; his Second boat, under the command of

CAPT. HENRY M. SHREVE, was the first that ascended the Mississippi and Ohio Rivers, and he was the Successful Inventor and Improver of Western River Steamers, and also Inventor of the Snag-boat, ... 67

RICHARD TREVITHICK, the Original Inventor of a Locomotive for Tram Roads, ... 90

GEORGE STEPHENSON, the first Successful Railway Engineer and Passenger Locomotive Builder, ... 105

THE STEAM ENGINE—its structure, its spirit, its food, and its performances, ... 219

SAMUEL F. B. MORSE, Original Inventor of the American Telegraph, ... 233

PAGE.

ALFRED VAIL, the associate of Professor Morse, and Inventor of the present, the first Morse Alphabet and Instruments used in practical telegraphing, ... 265

PART II.

DELVERS IN SCIENCE AND LITERATURE.

GEORGE CUVIER, the Eminent Naturalist, . . . 301

HUGH MILLER, the Stone Mason, Geologist, Author, and Editor, 311

ROBERT and WILLIAM CHAMBERS, Authors, Editors and Publishers, ... 531

HORACE GREELEY, Printer, Author, Editor, and Publisher, . 719

PART III.

MEN of the PEOPLE, who were PRACTICAL PHILANTHROPISTS.

JOHN FREDERICK OBERLIN, Philanthropist, . . 745

STEPHEN GIRARD, Merchant and Banker, . . . 751

GEORGE PEABODY, Merchant and Banker, . . . 755

PART I.

STEAM AND ELECTRICITY,

AND THE

MEN WHO FIRST UTILIZED THEM

AND MADE THEM THE

Great Motors of Modern Progress.

ILLUSTRATIONS AND EMBELLISHMENTS.

	PAGE
Portraits of Prof. Morse and Mr. Peabody, (*Frontispiece*).	
Fitch's Model Boat of 1785, with section of endless chain,	40
Fitch's Boat of 1787, from "Columbian Magazine," also Dr. Franklin's Model,	43
Fitch's Philadelphia and Trenton Packet, 1790,	48
Fitch's Bardstown Model, and Fac-simile of Letter,	55
Fulton's First Steamboat on the Hudson, 1807,	62
French's Steamer "Enterprise," 1814, First boat to ascend the Mississippi and Ohio, (see pp. 70–72.)	62
Portrait of Henry M. Shreve,	67
Steamers "Paragon" and "Caledonia," Western rivers 1819 and 1823,	see 78 and 79
Ohio River Steamers,	86
Oliver Evans's Road Engine,	93
Richard Trevithick's Tramroad Locomotive,	93
Blenkinsop's and Stephenson's Coal Engines,	149
First Railway Coach and First Passenger Engine,	171
An American Locomotive, with diagram,	208
War Steamer "Devastation,"	232
Statue of Prof. Morse,	256
Portrait of Alfred Vail, with Telegraph Instrument,	284
Fac-simile of Certificate,	293
Portrait of Hugh Miller,	311
House where Hugh Miller was born,	311
Lake Steamer China,	692
"Sound" Steamer Commonwealth,	738
Girard College, Philadelphia,	753

JAMES WATT.

ALL the inventions and improvements of recent times, if measured by their effects upon the condition of society, sink into insignificance, when compared with the extraordinary results which have followed the employment of steam as a mechanical agent. To one individual, the celebrated Watt the merit and honor of having first rendered it extensively available are pre-eminently due. The force of steam, in mechanics, was almost entirely overlooked until within the last two centuries. The Ancients were, in a small measure, acquainted with its expansive powers; its prodigious energies were noticed by a French writer, Solomon de Caus, who flourished in the beginning of the seventeenth century; in the decade of 1660, the Marquis of Worcester similarly remarked the properties of steam. About twenty years later, Sir Samuel Morland projected a method of employing it; and Denis Papier, a native of France, about 1690, contrived an Engine, acting with steam and the pressure of the atmosphere, for lifting water, but on an exceedingly rude plan. The next who tried such a scheme was Captain Savery, who, about 1698, began to erect Engines for lifting water, somewhat on the principle of the sucking-pump. Not long after Savery had invented his Engine, Thomas Newcomen, an iron-monger, and John Calley, a glazier, both of Dartmouth, in Devonshire, England, began also to direct their attention to the employment of steam. Their first Engine was constructed about 1711. This machine still acted on the principle of condensing the steam by means of cold water, and the pressure of the atmosphere on the piston. It was found of great value for pumping water from deep mines; but the mode of its construction, the great waste of fuel, the continual cooling and heating of the cylinder, and the limited capacities of the atmosphere in impelling the piston downward,—all tended to circumscribe its utility. Our knowledge of what might be done by steam was in this state, when the subject at last happily attracted the attention of Mr. Watt.

JAMES WATT was born at Greenock, Scotland, on the 19th of Janu-

ary, 1736. His father was a merchant, and also one of the magistrates of that town. He received the rudiments of his education in his native place; but his health being even then extremely delicate, as it continued to be to the end of his life, his attendance at school was not always very regular. He amply made up, however, for what he lost in this way, by the diligence with which he pursued his studies at home, where, without assistance, he succeeded, at a very early age, in making considerable proficiency in various branches of knowledge. Even at this time, his favorite study is said to have been mechanical science, to a love of which he was probably, in some degree, led by the example of his grandfather and his uncle; both had been teachers of mathematics, and had each left a large reputation for learning and ability in that department. Young Watt, however, was not indebted to any instructions of theirs for his own acquirements in science, the former having died two years before, and the latter the year after, he was born. At the age of eighteen, he was sent to London to be apprenticed to a maker of mathematical instruments; but, in little more than a year, the state of his health forced him to return to Scotland, and he never received any further instruction in that profession. A year or two after this, however, a visit which he paid to some relatives in Glasgow suggested to him the plan of attempting to establish himself there in that business. In 1757, he removed thither, and was immediately appointed Mathematical Instrument Maker to the college. He remained for some years, enduring almost constant ill health, but continued both to prosecute his profession, and to labor with extraordinary ardor and perseverance in the general cultivation of his mind.

Here he enjoyed the friendship and intimacy of several distinguished persons who were members of the University; especially of the celebrated Dr. Black, spoken of as the discoverer of the principle of latent heat, and Mr. (afterwards Dr.) John Robinson, so well known by his treatises on Mechanical Science, who was then a student, and about the same age as himself. Honorable as this appointment was, and important as were many of the advantages given him, he probably did not find it a very lucrative one; and, therefore, in 1763, when about to marry, he removed from his apartments in the University to a house in the city, and entered upon the profession of general Engineer.

For this his genius and scientific attainments admirably qualified him. He soon acquired a high reputation, and was extensively employed in making surveys and estimates for Canals, Harbors, Bridges, and other public works. His advice and assistance were sought for in almost all the important improvements of this description then undertaken or proposed in his native country. But another pursuit was destined, ere long, to divert him from this line of exertion, and to occupy his whole mind in efforts still more worthy of its extraordinary powers.

While yet residing in the college, his attention had been directed to the employment of Steam as a Mechanical agent, by some speculations of his friend, Robinson, as to the practicability of applying this power to the movement of wheel carriages. He had also, himself, made some experiments with Papin's digester, to ascertain the expansive force of steam.

He had not prosecuted the inquiry, however, so far as to have arrived at any determinate result, when, in the winter of 1763-4, a small model of Newcomen's engine was sent to him by the Professor of Natural Philosophy, to be repaired and fitted for exhibition in the class. The examination of this model set Watt thinking anew, and with more interest than ever, on the powers of steam. Struck with the radical imperfections of the Atmospheric Engine, he began to reflect upon the possibility of using steam in mechanics, in some new manner, and with much more powerful effect. With this idea he engaged in an extensive course of experiments for ascertaining the properties of steam, and was rewarded with several valuable discoveries. The rapidity with which water evaporates, he found, for instance, depended simply upon the quantity of heat which was made to enter it; and this again on the extent of the surface exposed to the fire. He also ascertained the quantity of coal necessary for the evaporation of any given quantity of water, the heat at which water boils under various pressures, and many other particulars of a similar kind, which had never before been accurately determined.

Thus prepared by a competent knowledge of the properties of the agent with which he had to work, he proceeded to consider, with a view to amend, what he deemed the two grand defects of Newcomen's engine. The first of these was the necessity arising from the method employed to concentrate the steam, which was, to cool the cylinder by injecting cold water before every stroke of the piston. On this account, a much more powerful application of heat was requisite for the purpose of again heating the vessel to be refilled with steam. In fact, Watt ascertained that, in feeding the machine, there was a waste of not less than three-fourths of the fuel. If the cylinder, instead of being cooled at every stroke, could be kept permanently hot, a fourth part of the heat would be found sufficient to produce steam to fill it. How, then, was this desideratum to be attained? Savery, the first who really constructed a working engine, and whose arrangements showed superior ingenuity, employed cold water upon the outside of the steam cylinder, a perfectly manageable process, but at the same time a very wasteful one, inasmuch as, every time it was repeated, it condensed not only the steam, but also cooled the vessel, which had again to be heated by a very large expenditure of fuel. Newcomen's method of injecting the water into the cylinder was a considerable improvement on Savery's, but still was objectionable on the same ground, though not to the same degree; it still not only condensed the steam, but cooled also the cylinder itself, in which more steam was to be

immediately manufactured, and therefore should, if possible, have been kept hot. It was also a very serious objection to this plan, that the injected water itself, from the heat of the place into which it was thrown, was very apt to be partly converted into steam; and the more cold water used, the more (under the circumstances) was new steam generated. In fact, in the best of Newcomen's Engines, the perfection of the vacuum was thus so greatly impaired, that the resistance to the piston, in its descent, amounted to about a fourth part of the whole atmospheric pressure by which it was carried down, or, in other words, the working power of the machine was thereby diminished one-fourth.

After reflecting upon all this, it at last occurred to Watt that it might be possible to condense steam in some other vessel than in the cylinder. This fortunate idea having presented itself, it was not long before the means for realizing it were also suggested. In the course of one or two days, as he tells us, he had all the necessary apparatus arranged in his mind. The plan which he devised was a simple one, therefore the more beautiful. He connected the cylinder and another vessel by an open pipe, so that, when the steam was admitted into the former, it flowed into the latter, and filled it also; this latter vessel only being subjected to a condensing process, by contact with cold water, a vacuum was produced, and into that, as a vent, more steam would immediately rush from the cylinder, which would likewise be condensed, and so the process would go on until the steam had left the cylinder, and a perfect vacuum had been effected in that vessel, without so much as a drop of cold water having touched or entered it. The separate vessel alone, or the condenser, as Watt called it, was cooled by the water condensing the steam, and, instead of being an evil, manifestly promoted and quickened the condensation. When Watt reduced these views to the test of an experiment, he found the result to answer his most sanguine expectations. The cylinder, although emptied of its steam for every stroke of the piston, as before, was now constantly kept at the same temperature with the steam, (or 212° Farenheit), and the consequence was, that one-fourth of the fuel formerly required sufficed to feed the engine. But besides this saving of expense in maintaining the engine, its power was greatly increased by the more perfect vacuum; the condensing water could not, as before, create new steam while displacing the old.

Thus, by the genius of this great inventor, was the serious defect of the old apparatus remedied. In carrying his ideas into execution, he encountered, as was to be expected, many difficulties, arising principally from the impossibility of realizing theoretical perfection of structure with such materials as he had to work with; but his ingenuity and perseverance overcame every obstacle.

One of the things which caused him the greatest trouble was, how to fit the piston so exactly to the cylinder as, without effecting the freedom of its motion, to prevent the passage of air between the two. In the old Engine, this end had been attained by covering the piston

with a small quantity of water, which, dripping into the space below, and mixing with the steam, had little or no evil consequence. But in the new construction, this receptacle for the steam, always to be kept both hot and dry, such an effusion of moisture, although only in very small quantities, would have occasioned material inconvenience. The air alone, which in the old engine followed the piston in its descent, acted with considerable effect in cooling the lower part of the cylinder. His attempts to overcome this difficulty, while they succeeded in that object, conducted Watt also to another improvement, which effected the complete removal of what we have called the *second* radical imperfection of Newcomen's engine, namely, its non-employment of the expansive force of the steam. The effectual way of preventing the air from escaping into the part of the cylinder below the piston would be, he thought, to dispense with the use of that element above the piston, and substitute there the same contrivance as below,—alternate steam and a vacuum. This was, of course, to be accomplished by merely opening communications from the upper part of the cylinder to the boiler on the one hand, and the condenser on the other, and forming it at the same time into an air-tight chamber, by means of a cover, with only a hole in it to admit the rod or shank of the piston; which might, besides, without impeding its freedom of action, be padded with hemp, the more completely to exclude the air. It was so contrived, accordingly, by a proper arrangement of the cocks and the machinery connected with them, that, while there was a vacuum in one end of the cylinder, there should be an admission of steam into the other; and the steam so admitted now served, not only, by its susceptibility of sudden condensation, to create the vacuum, but also, by its expansive force, to impel the piston.

These were the great improvements made by Watt, in what may be called the principle of the steam-engine, or, in other words, in the manner of using and applying the steam. They constitute, therefore, the grounds of his claim to be regarded as the true author of the conquest that was at last obtained by man over this powerful element. But original and comprehensive as were the views out of which these fundamental inventions arose, the exquisite and inexhaustible ingenuity which the Engine, as finally perfected by him, displays in every part of its subordinate mechanism, is calculated to strike us, perhaps, with scarcely less admiration. It forms undoubtedly the best exemplification that had ever been afforded, of the number and diversity of services which a piece of machinery might be made to render itself, by means solely of the various applications of its first moving power, when that had once been called into action. Of these contrivances, however, we can only notice one or two, by way of specimen. Perhaps the most singular is that called the Governor. This consists of an upright spindle, which is kept constantly turning, by being connected with a certain part of the machinery, and from which two balls are suspended in opposite directions by rods, attached by joints,

somewhat in the manner of the legs of a pair of tongs. As long as the motion of the Engine is uniform, that of the spindle is so likewise, and the balls continue steadily revolving at the same distance from each other. But as soon as any alteration in the action of the piston takes place, the balls, if it has become more rapid, fly farther apart, under the influence of the increased centrifugal force which actuates them, or approach nearer to each other in opposite circumstances. This alone would have served to indicate the state of matters to the eye; but Watt was not to be so satisfied. He connected the rods with the valve in the tube, by which the steam is admitted to the cylinder from the boiler, in such a way that, as they retreat from each other, they gradually narrow the opening which is so guarded, or enlarge it as they tend to collapse; thus diminishing the supply of steam when the engine is going too fast, and, when it is not going fast enough, enabling it to regain its proper speed, by allowing it an increase of aliment. Again, the constant supply of a sufficiency of water to the boiler is secured by an equally simple provision, namely, by a *float* resting on the surface of the water, which, as soon as it is carried down by the consumption of the water, to a certain point, opens a valve and admits more. And so on, through all the different parts of the apparatus, the various wonders of which can not be better summed up than in the forcible and graphic language of a recent writer:—"In the present perfect state of the engine, it appears a thing almost endowed with intelligence. It regulates with perfect accuracy and uniformity the *number of its strokes* in a given time, *counting* or *recording* them moreover, to tell how much work it has done, as the clock records the beats of its pendulum; it regulates the *quantity of steam* admitted to work; the *briskness of the fire;* the *supply of the water* to the boiler; *the supply of coal* to the fire; it opens and shuts its valves with absolute precision as to time and manner; it *oils its joints;* it takes out any air which may accidentally enter into parts which should be vacuous; and when any thing goes wrong which it can not itself rectify, it warns its attendants by ringing a bell; yet, with all these talents and qualities, and even when exerting the power of six hundred horses, it is obedient to the hand of a child; its aliment is coal, wood, charcoal, or other combustible; it consumes none while idle; it never tires, and wants no sleep; it is not subject to malady, when originally well made, and only refuses to work when worn out with age; it is equally active in all climates, and will do work of any kind; it is a water-pumper, a miner, a sailor, a cotton-spinner, a weaver, a blacksmith, a miller, etc., etc.; and a small engine, in the character of a *steam pony*, may be seen dragging after it on a railroad hundreds of tons of merchandise, or regiments of soldiers, with by far greater speed than that of our fleetest coaches. It is the king of machines, and a permanent realization of the *Genii* of Eastern fable, whose supernatural powers were occasionally at the command of men."

In addition to difficulties which his unrivaled mechanical ingenuity enabled him to surmount, Watt, notwithstanding the merit of his invention, had to contend for some time with others of a different nature, in his attempts to reduce them to practice. He had no pecuniary resources of his own, and was at first without any friend willing to run the risk of the outlay necessary for an experiment on a sufficiently large scale. At last, he applied to Dr. Roebuck, an ingenious and spirited speculator, who had just established the "Carron Iron Works," not far from Glasgow, and held also, at this time, a lease of the extensive coal works at Kinneal, the property of the Duke of Hamilton. Dr. Roebuck agreed to advance the requisite funds on having two-thirds of the profits made over to him; and upon this Mr. Watt took out his first patent in the beginning of the year 1769. An Engine, with a cylinder of eighteen inches in diameter, was soon after erected at Kinneal; and although, as a first experiment, it was necessarily in some respects of defective construction, its working completely demonstrated the great value of Watt's improvement. But Dr. Roebuck, whose undertakings were very numerous and various, in no long time after forming this connection, found himself involved in such pecuniary difficulties as to put it out of his power to make any farther advances in the prosecution of its object.

On this, Watt applied himself for some years almost entirely to the ordinary work of his profession as a Civil Engineer; but at last, about the year 1774, when all hopes of any further assistance from Dr. Roebuck were at an end, he resolved to close with a proposal which had been made to him through his friend, Dr. Small, of Birmingham, that he should remove to that town, and enter into partnership with an eminent hardware manufacturer, Mr. Boulton, whose extensive establishments at Soho had already become famous over Europe, and procured for England an unrivaled reputation for the arts there carried on.

Accordingly, an arrangement having been made with Dr. Roebuck, by which his share of the patent was transferred to Mr. Boulton, the firm of Boulton & Watt commenced the business of making Steam Engines in the year 1775.

Mr. Watt now obtained from Parliament an extension of his patent for twenty-five years from that date, in consideration of the acknowledged National importance of his Inventions. The first thing which he and his partner did was to erect an Engine at Soho, which they invited all persons interested in such machines to inspect. They then proposed to erect similar engines wherever required, on the very liberal principle of receiving as payment for each only one-third of the saving in fuel which it should effect, as compared with one of the old construction.

But the Draining of Mines was only one of the many applications of the steam power now at his command, which Watt contemplated, and in the course of time accomplished. During the whole

twenty-five years, indeed, over which his renewed patent extended, the perfecting of his invention was his chief occupation; and, notwithstanding a delicate state of health, and the depressing affliction of severe headaches, to which he was extremely subject, he continued throughout this period to persevere with unwearied diligence in adding new improvements to the mechanism of the engine, and devising the means of applying it to new purposes of usefulness. He devoted, in particular, the exertions of many years to the contriving of the best methods of making the action of the piston communicate a rotatory motion under various circumstances; and between the years 1781 and 1785 he took out four different patents for inventions, having this object in view.

While residing at the University of Glasgow, in 1759, Watt's young friend, Robinson, suggested the feasibility of applying steam power to the driving of wheel carriages on common roads. Robinson prepared a rough sketch of his proposed steam carriage, and in this sketch he located the cylinder with its open end downward, to avoid the necessity for using a working beam. Watt was then young,—but twenty-three,—and was very much occupied in his business of making Mathematical Instruments; he, however, proceeded to construct a model locomotive provided with two cylinders of tin-plate, intending that the pistons and their connecting rods should act alternately on two pinions attached to the axles of the carriage-wheels. The model, when made, did not answer Watt's expectations; and, shortly after, when Robinson left college to go to sea, he laid the project aside, and did not resume it for many years.

In the meantime, an ingenious French mechanic and military officer, named Nicholas Joseph Cugnot, constructed a steam carriage, at the arsenal, in 1769, at the cost of the Comte de Saxe. On being first set in motion, it ran against a stone wall which stood in its way, and threw it down. Here was evidence of its power. It afterwards traveled two and a quarter miles an hour, but could not be easily managed; and the size of the boiler being insufficient, it would not continue to work more than twelve to fifteen minutes. This locomotive was a simple and ingenious form of a high-pressure engine; and, although rude in construction, it was, considering the time of its appearance, a creditable piece of work, and excited no small degree of interest on the streets of Paris, where it made several successful trial-trips. One day, however, when turning the corner of a street near the Madeleine, and it was running at a speed of about three miles an hour, it became over-balanced, and fell with a heavy crash. Considered dangerous, it was thenceforth locked up securely in the arsenal. But the inventor's merits were duly recognized, by the Government granting him a pension of three hundred livres. His locomotive is still to be seen in one of the museums of Paris.

While Cugnot was constructing his machine at Paris, one Francis Moore, a linen-draper, was taking out a patent in London for moving

wheel carriages by steam. In March, 1769, he gave notice of his patent, but it does not appear that he did any thing beyond lodging the titles of his inventions.

James Watt's friend and correspondent, Dr. Small, of Birmingham, when he heard of Moore's intended project, wrote to the Glasgow inventor, to stimulate him to perfect his steam-engine, then in hand, and urging him to apply it, among other things, to purposes of locomotion. "I hope soon," said Small, "to travel in a fiery chariot of your invention." Watt replied to the effect that, "if linen-draper Moore does not use my Engines for driving his carriages, he can't drive them by steam. If he does, I will stop them." But Watt was a long way from perfecting his invention. The steam-engine, capable of driving carriages, was a problem to the solution of which Watt never fairly applied himself. It was enough for him to accomplish the great work of perfecting his condensed Engine, and with that he rested content.

But Watt continued to be so strongly urged by those about him to apply steam power to purposes of locomotion that, in his comprehensive patent of August 24, 1784, he included an arrangement with that object in view. From his specifications, we learn that he proposed a cylindrical or globular boiler, protected outside by wood, strongly hooped together, with a furnace inside entirely surrounded by the water to be heated, except at the ends.

Though Watt repeatedly expressed his intention of constructing a model locomotive after his specification, it does not appear that he ever carried it out. He was too much engrossed with other work; and besides, he never entertained very sanguine views as to the practicability of road locomotion by steam. He continued, however, to discuss the subject with his partner, Boulton, and from his letters we gather that his mind continued undetermined as to the best plan to be pursued.

From what he said to Boulton, it is plain that Watt's views as to road locomotion were crude and undefined; and, indeed, he never carried them farther. While he was thus discussing the subject with Boulton, William Murdock, one of the most skilled and ingenious workmen of the Soho firm, then living at Redruth, in Cornwall, was occupying himself during his leisure hours, which were but few, in constructing a model locomotive, after a design of his own. He had, doubtless, heard of the proposal to apply steam to locomotion, and, being a clever inventor, he forthwith set himself to work out the problem. The plan he pursued was very simple, and yet efficient. His model was of small dimensions, standing little more than a foot high; but it was sufficiently large to demonstrate the soundness of the principle on which it was constructed. It was supported on three wheels, and carried a small copper boiler, heated by a spirit-lamp, with a flue passing obliquely through it. The cylinder, of three-fourth-inch diameter, and two-inch stroke, was fixed in the top of the boiler, the piston-rod being connected with the vibrating beam attached to

the connecting-rod which worked the crank of the driving-wheel. This little engine worked by the expansive force of the steam only, which was discharged into the atmosphere after it had done its work of alternately raising and depressing the piston in the cylinder.

This model was invented and constructed in 1781; but from the correspondence of Boulton & Watt, we infer that it was not ready for trial until 1784. The first experiment with it was made in Murdock's own house at Redruth, when it successfully hauled a model wagon round the room, the single wheel placed in front of the engine, and working in a swivel frame, enabling it to run round in a circle.

Another experiment was made out of doors, on which occasion, small though the engine was, it fairly outran the speed of its inventor. One night, after returning from his duties at the Redruth mine, Murdock determined to try the working of his model locomotive. For this purpose, he had recourse to the walk leading to the church, about a mile from the town. It was rather narrow, and was bounded on each side by high hedges. The night was dark, and Murdock set out alone to try his experiment. Having lit his lamp, the water soon boiled, when off started the engine, with the inventor after it. Shortly after, he heard distant shouts of terror. It was too dark to perceive objects; but he found, on following up the machine, that the cries proceeded from the worthy pastor of the parish, who, going toward the town, was met on this lonely road by the hissing and fiery little monster, which he subsequently declared he had taken to be the Evil One, in *propia persona*.

Watt was by no means pleased when he learned that Murdock was giving his mind to these experiments. He feared that it might have the effect of withdrawing him from the employment of the firm, to which his services had become almost indispensable; for there was no more active, skillful, or ingenious workman in all their concern. Watt accordingly wrote to Boulton, recommending him to advise Murdock to give up his locomotive-engine scheme; but, if he could not succeed in that, then, rather than lose Murdock's services, Watt proposed that he should be allowed an advance of £100 to enable him to prosecute his experiments, and if he succeeded within a year in making an engine capable of drawing a post-chaise carrying two passengers and the driver, at four miles an hour, it was suggested that he should be taken as partner into the locomotive business, for which Boulton & Watt were to provide the necessary capital.

Two years later, (in September, 1786), we find Watt again expressing his regret to Boulton that Murdock was "busying himself with the steam carriage." "I have still," said he, "the same opinion concerning it that I had; but to prevent as much as possible more fruitless argument about it, I have one of some size under hand, and am resolved to try if God will work a miracle in favor of these carriages. I shall, in some future letter, send you the words of my

specification on that subject. In the mean time, I wish William could be brought to do as we do, to mind the business in hand, and let others throw away their time and money in hunting shadows." In a subsequent letter, Watt expressed his gratification "that William applies himself to his business." From that time Murdock, as well as Watt, dropped all further speculation on the subject, and left others to work out the problem of the locomotive engine. Murdock's model remained but a curious toy, which he took pleasure in exhibiting to his intimate friends.

Symington & Sadler, the "hunters of shadows" referred to by Watt, did little to advance the question.

So long as Boulton & Watt's patent continued to run, constant attempts were made in Cornwall and other mining regions to get round it, but they were Kings within the entire realm of their endeavors, until the term of their patent ended, in 1800.

Watt's engines had cleared the mines of water, and thereby rescued the mine lords from ruin; but they felt it to be a great hardship for them to be obliged to pay Boulton & Watt for the right to use them, and, therefore, they sought to stimulate the local Engineers to contrive some evasion of the patent. Jonathan Hornblower, who had been engaged in erecting Watt's engines in Cornwall, was the first to produce an engine that seemed likely to answer the purpose.

Then Edward Bull, who had been first a stoker, and then an assistant-tender of Watt's engine, turned out another pumping-engine, which promised safely to evade the patent; but the patentees proved successful in defending their right in several actions which were tried, so that the mine lords were compelled to disgorge, greatly to their disgust. Poor Hornblower was abandoned by them, and shortly after was almost in a state of starvation, and soon was imprisoned for debt. . . .

The Steam-Engine has already gone far to revolutionize the whole domain of human industry; and almost every year is adding to its power and conquests. In our manufactures, our arts, our commerce, our social accommodations, it is constantly achieving what, a little less than a century ago, would have been accounted miracles and impossibilities. The trunk of an Elephant, it has been finely and truly said, that can "pick up a pin" or rend an oak is nothing to it. It can engrave a seal, and crush masses of obdurate metal like wax, draw out, without breaking, a thread as fine as gossamer, and lift a Ship of War like a bauble in the air. It can embroider muslin, and forge anchors; cut steel into ribbands, and impel loaded vessels against the fury of the winds and waves. It had been employed many years at collieries, in propelling heavily-loaded carriages over railways; but the final great experiment of the Liverpool and Manchester Railway, for the first time, practically demonstrated with what hitherto undreamed-of rapidity traveling by land might thereafter be carried on through the agency of steam power.

Coaches, by this the most potent of all our mechanical agencies,

have been drawn forward at the flying speed of from thirty to sixty miles an hour; but it would be rash to conclude that even this is to be our ultimate limit of attainment.

In navigation the resistance of water increases rapidly, as the propelling force increases; but in railway traveling by land no such serious resistance has to be overcome. When present speed of land travel shall have become universal, in what a new state of society shall we find ourselves. We are now able to travel some seven hundred miles per day, for seven or eight days, on a continuous east and west line from the Atlantic to the Pacific, bringing the remotest extremes of our large country (especially when aided by telegraphic facilities) into neighborhood relations, and making the Nation a community indeed. When these facilities, like the light of heaven, shall have become equally diffused over the World, the benefits conferred by the highest civilization will not be long deferred.

"It is gratifying to reflect that, even when he was yet alive, Watt received from the voice of the most illustrious of his contemporaries the honors due to his genius. In 1785, he was elected a Fellow of the Royal Society; the degree of the Doctor of Laws was conferred upon him, by the University of Glasgow, in 1806; and in 1808 he was elected a member of the French Institute. He died on the 25th of August, 1819, in the eighty-fourth year of his age."

SIR RICHARD ARKWRIGHT.*

THE biography of James Watt having been given, we now turn to RICHARD ARKWRIGHT, who was born at Preston, in Lancashire, England, on the 23d of December, 1732, some ten months later than Washington first saw the light in Virginia.

Arkwright, from a very humble origin, rose to affluence and distinction by his perseverance in improving and perfecting machinery adapted to the cotton manufacture. Steam power was made cheap and available by the inventions of Watt; so that when, a few years later, Whitney had, by the invention of the Cotton-Gin, made the production of Cotton profitable, at a comparatively low price, the combination resulted which has since built up the great manufacturing towns of Britain and the United States, and brought into prominence those who, for a half century and more, have been known as the Cotton Lords of England, the Manufacturers of the New England States, and the Cotton Planters of the South. These great interests have almost completely changed the commerce of the world.

The parents of Arkwright were very poor; and he was the youngest of a family of thirteen children. The education he received was extremely limited, if indeed he was ever at school at all. But little learning would probably be deemed necessary for the profession to which he was bred, that of a barber. He followed this business until nearly thirty years of age, and during this early period his history is hidden and obscure enough.

About the year 1760, however, or soon after, he quit shaving, and commenced business as an itinerant hair-dealer, collecting the commodity by traveling up and down the country; and then, after he had dressed it, selling it again to the wig-makers, with whom he very soon acquired the character of keeping a better article than any of his rivals in the same trade. He obtained possession, too, we are told, of the then secret method of dyeing hair, by which he, doubtless, contrived to augment his profits; and, perhaps, in his accidental acquaintance with this little piece of chemistry, we may find the germ of that sensibility he soon began to manifest to the value of new and unpub-

* Under the heading adopted for Part I, this and the sketch of Whitney, following it, are scarcely in place; the reader will make due allowance.

lished inventions in these arts, and his passion for patent-rights and the pleasures of monopoly.

It would appear that his first effort in mechanics, as has happened in the case of many other ingenious men, was an attempt to discover the perpetual motion. It was on inquiring after a person to make him some wheels for a project of this kind that, in the latter part of the year 1767, he got acquainted with a clockmaker of the name of Kay, then residing at Warrington, with whom it is certain that he was, for a considerable time after, closely connected. From this moment we may date his entrance upon a new career.

The manufacture of cotton cloths was introduced into England only towards the end of the seventeenth century; although stuffs, improperly called Manchester Cottons, had been fabricated nearly three centuries before, which, however, were made entirely of wool. It is generally thought that the first attempt at the manufacture of cotton goods in Europe did not take place till the end of the fifteenth century, when the art was introduced into Italy. Before this, the only cottons known had been imported from the East Indies; where alone, because of cheap labor, the cotton plant could be grown with profit, until after Whitney invented the Cotton-Gin.

The English Cottons, for many years after the introduction of the manufacture, had only the weft of cotton, the warp or longitudinal threads of the cloth being of linen. It was conceived to be impracticable to spin the cotton with a sufficiently hard twist to make it serviceable for this latter purpose. Although occasionally exported, too, in small quantities, the manufactured goods were chiefly consumed in England. It was not till the year 1760 that any considerable demand arose for them abroad.

But about this time the exportation of cottons, both to the Continent and to America, began to be carried on on a large scale, and the manufacture, of course, received a corresponding impulse. The thread had hitherto been spun entirely (as it still continues to be in India) by the tedious process of the distaff and spindle, the spinner drawing out only a single thread at a time. But as the demand for the manufactured article continued to increase, a greater and greater scarcity of weft was experienced, till at last, although there were 50,000 spindles constantly at work in Lancashire alone, each occupying an individual spinner, they were found quite insufficient to supply the quantity of thread required. The weavers generally in those days had the weft they used spun for them by the females of their family; and now "those weavers," says Mr. Guest, in his history of the Cotton Manufacture, "whose families could not furnish the necessary supply of weft, had their spinning done by their neighbors, and were obliged to pay more for the spinning than the price allowed by their masters; and, even with this disadvantage, very few could procure weft enough to keep themselves constantly employed. It was no uncommon thing for a weaver to walk three or four miles in

a morning, and call on five or six spinners, before he could collect weft to serve him the remainder of the day; and when he wished to weave a piece in a shorter time than usual, a new ribbon or gown was necessary to quicken the exertions of the spinner."

It was natural, in this state of things, that attempts should be made to contrive some more effective method of spinning, and, in fact, several ingenious individuals seem to have turned their attention to the subject. Long before this time, indeed, spinning had been thought of by more than one speculator. A Mr. Wyatt, of Lichfield, is stated to have actually invented an apparatus for that purpose so early as the year 1733, and to have had factories built and filled with these machines both at Birmingham and Northampton. These undertakings, however, not being successful, the machines were allowed to perish, and no model or description of them was preserved. There was also a Mr. Laurence Earnshaw, of Motram, in Cheshire, of whom "it is recorded," says Mr. Baines, in his history of Lancashire, "that in the year 1753, he invented a machine to spin and reel cotton at one operation, which he showed to his neighbors and then destroyed it, through the generous apprehension that he might deprive the poor of bread"—a mistake, but a benevolent one.

It was in the year 1767, as we have mentioned, that Arkwright became acquainted with Kay. In 1768, the two friends appeared together at Preston, and immediately began to occupy themselves busily in the erection of a machine for spinning cotton thread, of which they had brought a model with them. They prevailed upon a Mr. Smalley, who is described to have been a liquor merchant and painter of that place, to join them in their speculation; and the room in which the machine was fixed was the parlor of a dwelling-house attached to a free grammar-school, which Smalley obtained from his friend, the school-master. At this time Arkwright was so poor that, an election contest having taken place in the town of which he was a burgess, it is asserted that his friends, or party, were obliged to subscribe to get him a decent suit of clothes before they could bring him into the poll-room. As soon as the election was over, he and Kay left Preston, and, carrying with them their model, betook themselves to Nottingham, the apprehension of the hostility of the people of Lancashire to the attempt he was making to introduce spinning by machinery, having, as Arkwright himself afterward stated, induced him to take this step. On arriving at Nottingham, he first made arrangements with the Messrs. Wright, bankers, for making the necessary supply of capital; but they, after a short time, having declined to continue their advances, he took his model to Messrs. Need & Strutt, stocking-weavers of the place, the latter of whom was a particularly ingenious man, and well qualified, from scientific acquirements of which he had possessed himself under many disadvantages, to judge of the adaptation of the new machinery to its proposed object. An inspection of it perfectly satisfied him of its great value; and he and Mr. Need immediately agreed

to enter into partnership with Arkwright, who, in 1769, took out a patent for the machine as its inventor. A Spinning Mill driven by horse-power was, at the same time, erected, and filled with the frames; being, unless we include those erected many years before by Mr. Wyatt, the first works of the kind that had been known in England. In 1771, Arkwright and his partners established another Mill at Cromford, in the parish of Wirksworth, in Derbyshire, the machinery of which was set in motion by a water-wheel, and in 1775 he took out a second patent, on additions which he had made to his original apparatus.

In what we have hitherto related, we have carefully confined ourselves to facts which are universally acknowledged; but there are other points of the story that have been stated in very opposite ways, and have given rise to much doubt and dispute.

The machinery for which Arkwright took out his patents consisted of various parts, his second specification enumerating no fewer than ten different contrivances; but of these, the one that was by far of greatest importance was a device for drawing out the cotton from a coarse to a finer and harder twisted thread, and so rendering it fit to be used for warp as well as weft. This was most ingeniously managed by the application of a principle which had not yet been introduced into any other mechanical operation. The cotton was in the first place drawn off from the skewers, on which it was fixed by one pair of rollers, which were made to move at a comparatively slow rate, and which formed it into threads of the first and coarser quality; but at a little distance behind was placed a second pair of rollers, revolving three, four, or five times as fast, which took it up when it had passed through the others, the effect of which would be to reduce the thread to a degree of fineness so many times greater than that which it originally had. The first pair of rollers might be regarded as the feeders for the second, which could receive no more than the others sent to them; and that, again, could be no more than these others themselves took up from the skewers. As the second pair of rollers therefore revolved, we will say five times for every one revolution of the first pair, or, which is the same thing, required for their consumption in a given time five times the length of thread that the first did, they could obviously only obtain so much length by drawing out the common portion of cotton into thread of five times the original fineness. Nothing could be more beautiful or more effective than this contrivance, which, with an additional provision for giving the proper twist to the thread, constitutes what is called the water frame or throstle.

Of this part of his machinery, Arkwright particularly claimed the invention as his own. He admitted with regard to some of the other machines included in his patent, that he was rather their improver than their inventor; and the original spinning-machine for coarse thread, commonly called the spinning-jinny, he frankly attributed, in its first conception, to a person of the name of Hargrave, who resided at Blackburn, and who, he said, having been driven out of Lancashire

in consequence of his invention, had taken refuge in Nottingham, but, unable to bear up against a conspiracy formed to ruin him, had been at last obliged to relinquish the further prosecution of his object, and died in obscurity and distress.

There were, however, other parties who had an interest as well as Arkwright in these new machines, and who would not allow that any of them were of his invention. As to the principal of them, the water-frame, they alleged that it was in reality the invention of a poor reed-maker by the name of Highs, or Hayes, and that Arkwright had obtained the knowledge of it from his old associate Kay, who had been employed by Highs to assist him in constructing a model of it a short time before Arkwright had sought his acquaintance. Many cotton-spinners, professing to believe this to be the true state of the case, actually used Arkwright's machinery in their factories, notwithstanding the patent by which he had attempted to protect it; and this invasion of his monopoly was carried to such an extent, that he at last found himself obliged to bring actions against no fewer than nine different parties.

It would be needless to enter here into the history of Arkwright's legal contests, which, after varied success, he finally lost. Whatever conclusion may be come to on the subject of his claim to the invention of the machinery introduced by him into his spinning factories, it is incontestable that to him alone belongs the merit both of having combined its different parts with admirable ingenuity and judgment, and of having, by his unwearied and invincible perseverance, first brought it into actual use on any thing like an extensive scale, and demonstrated its power and value. The several inventions which his patent embraced, whether they were his own or not, would probably but for him have perished with their authors; none of whom except himself had the determination and courage to face the multiplied fatigues and dangers that lay in the way of achieving a practical exemplification of what they had conceived in their minds, or to encounter any part of that opposition, incredulity, and ridicule; of those disappointments, repulses, losses, and other discouragements over all of which he at last so completely triumphed. When he set out on this career, he was poor, friendless, and utterly unknown. We have already stated that, on his coming with Kay to Preston, he was almost in rags; and it may be added, that, when he and Kay made application immediately before this to a Mr. Atherton for some pecuniary assistance to enable them to prosecute their plans, Arkwright's appearance alone was enough to determine that gentleman to have nothing to do with the adventure. Can we have a more exciting example, then, of what a resolute heart can do under apparently the most hopeless circumstances?—of what ingenuity and perseverance together may overcome in the pursuit of what they are determined to obtain? And this is the grand lesson which the history of Arkwright is fitted to teach us: to give ourselves wholly to one object, and never to de-

spair of reaching it. Even after he had succeeded in forming his partnership with Messrs. Need & Strutt, his success was far from being secured. For a long time the speculation was a hazardous and unprofitable one, and no little outlay was required to carry it on. He tells us himself that in his case it did not begin to pay till it had been persevered in for five years, and had swallowed up a capital of more than twelve thousand pounds. We can not doubt that it required all Arkwright's dexterity and firmness to induce his partners to persevere with the experiment under this large expenditure and protracted disappointment. But it was the character of the man to devote his whole heart and faculties to whatever he engaged in. Even to the close of his life, the management of his extended manufacturing operations was his only occupation, and even amusement. Although he had been from early life afflicted with severe asthma, he took scarcely any recreation, employing all of his time either in superintending the daily concerns of these establishments, which were regulated upon a plan that itself indicated in its contriver no little ingenuity and reach of mind, or in adding such improvements to his machinery from time to time as his experience and observation suggested. And thus it was that he raised himself from a poor barber to what he eventually became—not merely a man of rank and affluence, but the founder of a new branch of National industry, destined in a wonderfully short space of time, to assume the very first place among the manufacturers of his own country and America.

ELI WHITNEY.

ELI WHITNEY, the Arkwright of America, and one of the most intrepid and persevering improvers that ever lived, was the son of a respectable farmer at Westborough, Worcester County, Massachusetts, where he was born in the year 1765. Very early, young Eli gave striking indications of the mechanical genius for which he afterwards was so distinguished. His education was of a limited character until he reached the age of nineteen, when he conceived the idea of entering college. Notwithstanding the opposition of his parents, he prepared himself for the Freshman class in Yale College, which he entered May, 1789, partly by means of the profits of his manual labor, and partly by teaching a village school.

Soon after he took his degree, in the autumn of 1792, he entered into an engagement with a gentleman of Georgia, to reside in his family as a private teacher. But on his arrival in that state, he found that another teacher had been employed, and he was left entirely without resources. Fortunately, however, among the passengers in the vessel in which he sailed was Mrs. Greene, the widow of the celebrated General, who had given him an invitation to spend some time at her residence at Mulberry Grove, near Savannah: and on learning his disappointment, she benevolently insisted upon his making her house his home until he had prepared himself for the bar, as was his intention.

Whitney had not been long in her family before a complete change was made in his purposes. A party of gentlemen on a visit to Mrs. Greene, having fallen into a conversation upon the state of agriculture among them, expressed great regret that there was no means of cleansing the green seed-cotton, or separating it from its seed, remarking that, until ingenuity could devise some machine which would greatly facilitate the process of cleansing, it would be in vain to think of raising cotton for the market. "Gentlemen," said Mrs. Greene, "apply to my young friend, Mr. Whitney; he can make any thing." She then conducted them into a neighboring room where

she showed them a number of specimens of his genius. The gentlemen were next introduced to Whitney himself, and when they named their object, he replied that he had never seen either cotton or cotton seed during his life. But the idea was engendered; and it being out of season for cotton in the seed, he went to Savannah and searched among the warehouses and boats until he found a small portion of it. This he carried home, and set himself to work with such rude materials and instruments as a Georgia plantation afforded. With these resources, however, he made tools better suited to his purpose, and forged his own wire, of which the teeth of the earliest gins were made, which was an article not at that time to be found in the market of Savannah. Mrs. Greene and Mr. Miller (a gentleman who having first come into the family of General Greene as a private tutor, afterward married his widow) were the only persons admitted to his workshop—who knew in what way he was employing himself. The many hours he spent in his mysterious pursuits afforded matter of great curiosity, and often railery to the younger members of the family. Near the close of the winter the machine was so nearly completed as to leave no doubt of its success. Mrs. Greene then invited to her house gentlemen from different parts of the State, and on the first day after they had assembled she conducted them to a temporary building which had been erected for the machine, and they saw with astonishment and delight, that more cotton could be separated from the seed in one day, by the labor of a single hand, than could be done in the usual manner in the space of many months.

The machine which Mr. Whitney thus constructed, consisted chiefly of a process of circular saws, which, by a rotary motion, dragged the cotton between wires, leaving the seeds to fall to the bottom, while the cotton so cleaned was carried off by a rotary brush playing upon the saws. An invention so important to the agricultural interests as it has proved to every department of human industry, could not long remain a secret. The knowledge of it soon spread through the state, and so great was the excitement on the subject, that multitudes of persons came from all quarters to see the machine: but it was not deemed prudent to gratify their curiosity until the patent-right had been secured. So determined, however, were some of the populace to possess this treasure, that neither law nor justice could restrain them. They broke open the building by night and carried off the machine. In this way the public became possessed of the invention; and before Mr. Whitney could complete his model and secure his patent, a number of machines were in successful operation, constructed with some slight deviation from the original, with the hope of evading the penalty for violating the patent-right. A short time after this he entered into partnership with Mr. Miller, who, having considerable funds at command, proposed to him to become his joint adventurer, and to be at the whole expense of maturing the invention until it should be patented. If the machine succeeded in its intended operation, the

parties agreed to share equally all the profits and advantages accruing from it. The instrument of their partnership bears date May 27, 1793.

Immediately afterward Mr. Whitney repaired to Connecticut, where, as far as possible, he was to perfect the machine, obtain a patent, and manufacture and ship for Georgia such a number of machines as would supply the demand. On June 20, 1793, he presented his petition for a patent to Mr. Jefferson, then secretary of state; but the prevalence of yellow fever in Philadelphia, at that period the seat of government, prevented his concluding the business until several months afterward. We have not space sufficient at our disposal to give a satisfactory detail of the obstacles and misfortunes which for a long time hindered the partners from reaping those advantages from the invention which it should have procured for them, and which they had an ample right to expect. These difficulties arose principally from the innumerable violations of their patent-right, by which they were involved in various, almost interminable, lawsuits. The legislature of South Carolina purchased, in 1801, their right for that state for the sum of fifty thousand dollars—a mere "song," to use Whitney's own phrase, in comparison with the worth of the thing; but it was securing something. It enabled them to pay the debts which they had contracted, and divide something between them. In the following year, Mr. Whitney negotiated a sale of his patent-right with the state of North Carolina, the legislature of which laid a tax of two shillings and sixpence upon *every saw* (and some of the gins had forty saws) employed in ginning cotton, to be continued for five years, which sum was to be collected by the Sheriffs in the same manner as the public taxes, and after deducting the expenses of collection, the proceeds were faithfully paid over to the patentees. No small portion, however, of the funds thus obtained in the two Carolinas was expended in carrying on the fruitless lawsuits which it was deemed necessary to prosecute in Georgia. A gentleman who was well acquainted with Mr. Whitney's affairs in the South, and sometimes acted as his legal adviser, observed, that, in all his experience in the thorny profession of law, he had never seen a case of such perseverance under such persecution: "Nor," he adds, "do I believe that I ever knew any other man who would have met them with equal coolness and firmness, or who would have obtained even the partial success which he had."

There have indeed been but few instances in which the author of such inestimable advantages to a whole country as those which accrued from the invention of the cotton gin to the Southern States, was so harshly treated, and so inadequately compensated, as the subject of this sketch. He did not exaggerate when he said it raised the value of those states from fifty to one hundred per cent. "If we should assert," said Judge Johnson, "that the benefits of this invention exceed *one hundred millions of dollars*, we can prove the

assertion by correct calculation." Besides the violations of his right, he had to struggle against the efforts of malevolence and self interest to deprive him of the honor of the invention, which he did triumphantly. In 1803, the entire responsibility of the whole concern devolved upon him, in consequence of the death of Mr. Miller. In 1812, he made application to Congress for the renewal of his patent. In his memorial, he presented a history of the difficulties which he had been forced to encounter in defense of his right, observing that he had been unable to obtain any decision on the merits of his claim until he had been eleven years in the law, and thirteen years of patent term had expired. He set forth that his invention had been a source of opulence to thousands of the citizens of the United States: that as a labor-saving machine, it would enable one man to perform the work of a thousand men; and that it furnishes to the whole family of mankind, at a very cheap rate, the most essential article of their clothing. Hence, he humbly conceived himself entitled to a farther remuneration from his country, and thought he ought to be admitted to a more liberal participation with his fellow-citizens to the benefits of his invention. It strikes us with no little surprise, that the Southern planters, gentlemen who enjoy a great and just reputation for elevation and generosity of character, should not have taken some means of conveying to Mr. Whitney an adequate and substantial testimony of the gratitude which they must have felt toward one to whom they were so incalculably indebted. So far, however, from this having been the case, even the application just mentioned was rejected by Congress, on account of the warm opposition it experienced from a majority of the southern members.

Some years before, in 1798, Mr. Whitney, impressed with the uncertainty of all his hopes founded on the cotton-gin, had engaged in another enterprise, which conducted him by slow but sure steps to a competent fortune. This was the manufacture of arms for the United States. He first obtained a contract through the influence of Oliver Wolcott, at that time Secretary of the Treasury, for ten thousand stand of arms, amounting to one hundred and thirty-four thousand dollars, which was to be fulfilled within a little more than two years. This was a great undertaking, as may be inferred from the facts, that the works were all to be erected, the machinery was to be made, and much of it to be invented; the raw materials were to be collected from different quarters, and the workmen themselves, almost without exception, were yet to learn the trade. The impediments he was obliged to remove were too numerous and great to allow him to fulfill his stipulation as to time, and eight years instead of two elapsed before the muskets were all completed. The entire business relating to the contract was not closed until January, 1809, when (so liberally had the government made advances to the contractor) the final balance due Mr. Whitney was only two thousand four hundred dollars. It is universally conceded that his superior genius and industry greatly

contributed to the improvement of the manufacture of arms, and indeed to the general advancement of arts and manufactures; for many of his inventions for facilitating the making of muskets were applicable to most other manufactures of iron and steel.

In 1812, he entered into a new contract with the United States for fifteen thousand stand of arms, and in the meantime executed a similar engagement for the State of New York. In January, 1817, he married the youngest daughter of Pierpont Edwards, late Judge of the District Court for the State of Connecticut. For the five subsequent years he continued to enjoy domestic happiness, a competent fortune, and an honorable reputation, when he was attacked by a fatal malady, an enlargement of the prostate gland, which, after causing great and protracted suffering, terminated his life on the 8th of January, 1825. In person, Mr. Whitney was considerably above the ordinary size, of a dignified carriage, and of an open, manly, and agreeable countenance. His manners were conciliatory, and his whole appearance such as to inspire respect. He possessed great serenity of temper, though he had strong feelings and a high sense of honor. Perseverance was a striking trait in his character. Every thing that he attempted he effected as far as possible.

In the relations of private life, he enjoyed the affection and esteem of all with whom he was connected.

JOHN FITCH.

THROUGH the power of steam, great changes have been wrought in the relations of states and in the commerce of the world; the ends of the earth have, in a large sense, been brought together. By this power rapid, comfortable, and cheap transit has been attained, and enjoyed for a half century, by the nations of Europe, and more especially by our own people. In traversing the ocean, and to a greater extent upon our own great inland seas, and in threading the great rivers of our central valley, America has reaped the benefits conferred by steam navigation. By the aid of this agent, and largely because of it, our large territories have been magically transformed into great and magnificent states, covered with towns and cities, and filled with the comfortable homes of a great and free people.

Therefore, all Americans must feel deeply interested in knowing who first made steam available for purposes of locomotion. With slight exceptions, two entire generations have given the first place to a distinguished name among her sons, which should take a secondary position on the roll of honor. Why this has been so, in the face of facts known to many men filling the highest places in the history of our country, will be to our readers, as it is to us, a mystery not easily solved. Fifty-five years ago, in the year 1817, the original patents, drafts, specifications, and models of Fitch and Fulton were exhibited before a committee of the New York Legislature, raised upon the petition of Governor Ogden, of New Jersey. Many witnesses were examined, and among them men of the highest character, and the arguments of able council were heard. After much deliberation, this committee reported to the legislature, and in the document submitted are the following expressions: "The steamboats built by Livingston and Fulton were in substance the invention patented to John Fitch, in 1791, and Fitch, during the term of his patent (fourteen years), had the exclusive right to use the same in the United States."

We now proceed to sketch the career of this remarkable person, a career filled with unusual incidents. John Fitch was the fifth child of Joseph and Sarah Fitch, and was born January 21st, 1743, at

the paternal homestead, in the township of Windsor, Hartford County, Connecticut. The father was not inclined to liberality, but was a rigid and stern man, who, as his son says, "always had plenty of victuals in the house." John began his attendance at school when quite young, and, when nine years old, had mastered the "fundamental rules" of arithmetic, and manifested a strong love for study; yet he was taken from school, and although so small as to be unable to "swingle more than two pounds of flax, or thrash more than two bushels of grain in a day," was put at this "pitiful, trifling labor," greatly to his disgust in later years, because he felt that he had been unreasonably deprived of the benefits of such an education as might easily have been given him.

At the age of eleven, he heard of Salmon's Geography, as a book that would furnish "information of the whole world," and asked his father to buy it for him; but he did not feel disposed to make the purchase. John, however, soon after, obtained permission to plant potatoes on small patches of ground not otherwise occupied, and at odd ends of time and on holidays cultivated them, and thus procured the desired treasure. He became thoroughly versed in its contents, and able to impart his knowledge of nations, their population, boundaries, towns, etc. His father instructed him in surveying to the extent of his own information. Among their neighbors was Governor Wolcott, father of Oliver Wolcott, afterwards one of the signers of the Declaration of Independence. One day the governor asked his father if John might carry the chain for him while making some surveys on his farm, and John was thereby much elevated in his own estimation, especially because of the deference paid by the governor to his suggestions. They were together two days or more, so that John expected pay; but in this he was disappointed, as the old gentleman was too saving of his means, to meet his wishes. John attended school for six months in his thirteenth year, but, for several years previous, had but about a month at school each year. At fifteen he was hired out by his father for one winter, at eleven shillings a month.

At the age of seventeen, becoming weary and disgusted with farm labor, he started for Rocky Hill, on the Connecticut River, on an agreement to make one voyage to New York, in a vessel under the command of Capt. Abbott; but, experiencing rough treatment at the hands of the mate, he quit the craft before leaving port, and engaged on another vessel, in which he coasted, and after five weeks returned home.

This trip was a pleasant one for him, so that, when solicited by one Cheney to become his apprentice and learn the business of clock-making, he felt undecided as to whether to make another venture to sea or learn the trade. Finally his indentures were duly executed, with the understanding that he should furnish his own clothes and work half the year at farm labor. His brother-in-law supplied him

with the clothes, and his preceptor in clock-making was equal to his utmost demands for "outside work." He was eighteen years old when he became an apprentice, and at the end of two years had spent more than two-thirds of his time at other labor than clock-work. Much of his time had been spent at "trifling, pottering brass-work," so that he became dissatisfied, and at the end of two years and a half, by a mutual understanding, left Benjamin, and went to live with his brother, Timothy Cheney, who was to teach him "brass and wooden clock-making and watch-making." At the former place he had taken dinner from the same pot of bean soup for nine consecutive days without being molested; but his new master "was a very small feeder," and constantly imveighing against gluttony. His wife was "a pretty sensible, good kind of a woman," and supplied her table well, while the family always ate as "quick as him," who was ever prompt to close the meal by returning thanks. After eight months' service, in which he was working brass from sunrise to ten o'clock at night, he complained of injustice, and quarreled with his employer, who finally released him from his bond to stay a year, upon the condition that he should pay 8*l.*, which was adjusted by the joint note of his brother and brother-in-law.

At twenty-one, John Fitch found himself in debt 20*l.*, and without knowledge of either clock or watch-making. With twenty shillings loaned him by a young man named Burnham, who was courting his sister, he resolved to start business as an artificer in small brass-work. His father boarded him the first month without pay. He was successful in paying his debts, and at the end of two years was out of debt and worth 50*l.* During this time he had acquired some knowledge of brass clocks, and had successfully cleaned and repaired a clock for one of the Wolcott family.

Soon he was induced to enter a partnership with two poorer young men than himself, who were to manufacture potash, while he managed his business in brass-work; but it became necessary for him to quit his own business and endeavor to save his investment in the potash works, which were twenty-five miles away from his father's home. He bought out his partners, but did not succeed in making his new business profitable. In the mean time he courted, and on the 29th of December, 1766, married Lucy Roberts, who was several years his senior, and the daughter of a man of property. Fitch built a shop for brass-work, which proved larger and more expensive than was requisite, or than he could pay for, without extra efforts; but finally he disentangled himself from embarrassments.

Meanwhile, "his wife was high-tempered," and although he avers "he never gave her an angry word," he was continually subject to her displeasure. Becoming convinced that he could not live happily with her, and, after repeatedly stating to his wife that she must restrain her temper, or he would be forced to leave her, he finally left their home, against her warm and urgent entreaties to remain with herself

and infant son. Their son, Shaler Fitch, was born November 2d, 1767, and their daughter, Lucy, after the father's departure in 1769. After working in the State of New York three months, Fitch traveled by land, making money as he went, in cleaning clocks; by the way of Elizabeth—town, Rahway, New Brunswick, and Princeton, he reached Trenton, New Jersey, in May 1769.

At Trenton, Fitch was employed by a tinner to make a quantity of brass buttons, which he accomplished under difficulties. His employer, Clunn, had an old watch which he successfully repaired. This increased his confidence, so that, by the aid of his friend, Clunn, he found employment with a silversmith of limited acquirements in his profession, who had a fine set of tools, but was without skill to use them.

By his ingenuity and application, Fitch soon possessed himself of the trade; but business in the shop was dull, and he thought best to itinerate as a peddler in the surrounding districts. He started off with fifty or sixty pairs of brass sleeve-buttons, which he sold for 10d. per pair, and during his trip of a fortnight cleaned a dozen clocks. Returning to Trenton, he manufactured for himself a lot of silver and brass buttons, with which he started out again in two weeks, and succeeded admirably.

His recent employer, Wilson, getting embarrassed, Fitch bought his tools for 40*l.*, and paid 30*l.* down in cash. He pursued his business by trips through the country, often carrying a budget of 200*l.* value, and thus increased his means until, at the breaking out of the Revolution, he estimated his assets at 800*l.*

The Committee of Safety of the Province of New Jersey solicited the services of Fitch as a gunsmith, after he had become first lieutenant of the first company raised in Trenton. During the summer of 1776, Fitch was called upon for arms to supply the militia, ordered on an expedition to Amboy, and was under the necessity of soliciting from the owners all the arms to be had by their consent; but he soon was unwittingly involved in a quarrel, which was mortifying to him, so that he abandoned his comrades in the expedition, and returned to Trenton, where his presence was much needed. He was of infinitely more service to the State in the gun-factory than he could have been in the field.

He afterwards pursued his business in Bucks County, Pennsylvania, but his $40,000 in continental money was of no greater value than $100 in specie. He determined that he would save his money by buying land-warrants in Virginia, and for that purpose left Bucks County in the spring of 1780, for Philadelphia, where he obtained from Dr. John Ewing, of the University of Pennsylvania, letters of recommendation to Dr. Madison, then president of William and Mary College, at Richmond, Virginia. He journeyed to Richmond on foot, through a country desolated by war, and from Richmond west was accompanied by William Tucker, whom he had engaged to assist

him in his surveys of lands, which he intended to locate in what is now known as Kentucky. After many weeks and much fatigue, he found himself, in the early summer of 1780, at Wheeling Island. His trip down the Ohio River was not without exciting adventures. In company with a Baptist preacher, named Barnard, who explored for him, he located some sixteen hundred acres of land. He returned to Virginia from Kentucky in the spring of 1781. His returns of survey were filed at Richmond, but his patents were not issued until the following year; one bore the date June 1st, 1782, and two others September 1st, 1782. On his return from his western trip, Fitch went to his old home in Bucks County, to collect, and settle up his old business.

He finally decided to take his money—about 150*l.*, in specie—and invest it in flour, at Fort Pitt,—now Pittsburgh,—and go down the Ohio and Mississippi to New Orleans, intending to return from there to Philadelphia. Early in March, 1782, he reached Fort Pitt, and proceeded to carry out his plans, by chartering, in company with several others, a boat commanded by Captain Patterson. They started on their voyage with nine men besides the Captain, but were attacked by Indians, while aground, near the mouth of the Muskingum. One or two of their number were shot, and the rest made captives.

After many months of adventure among the tribes of Ohio, during the great excitement which followed the wholesale slaughter by the whites of the Christian (Moravian) Indians, the party reached the Maumee River, and soon after arrived at Detroit.* They were passed into the hands of the British as prisoners of war, and were sent below Niagara to Prison Island, forty-five miles above Montreal, in the early summer of 1782. They were exchanged in the autumn, leaving Quebec, November 25, and arriving in New York on Christmas, 1782. When the ship cast anchor, he and his fellow-prisoners had been ten weeks on the route from Prison Island. When discharged, he went directly to his friends in Warminster, Pennsylvania.

Fitch succeeded in interesting several gentlemen, who formed a Company, and sent him with others to survey lands on the Northern side of the Ohio, 1783. They began near the mouth of the Hocking River, and surveyed (up the river some eighty or ninety miles) about 36,000 acres; after this a greater number of acres were located, and the party returned to Philadelphia.

Colonel Whittlesey tells us that Fitch joined the Bristol (Pa.) Lodge of Freemasons in January, 1783. His associates in the land venture were satisfied with the results of his former trip, and induced him to start out early that year. He began surveying, up the Muskingum, in

*The sketch we give of Fitch is simply to show his connection with the invention of the Steam-boat. Our readers who feel interested in his adventures, will find them in Westcott's Life of John Fitch, published by Lippincott, Philadelphia, 1857. We have condensed our Narrative mainly from that work.

March, 1783, and went a distance of seventy-five miles from its mouth. On this trip 250,000 acres were surveyed, and he felt sure that one day he would be "a man of fortune;" but on his return to Bucks County, he learned that Congress had recently passed resolutions, "that the North-Western Territory should be divided into States, and that all lands should be laid out at right angles, and in sections of one mile square, and should in that manner be located." He felt that his plans were in a measure frustrated; he, however, deemed it judicious to go again to the frontiers, and "re-survey, or rather note the most valuable sections." General Harrison, then Governor, issued a proclamation aimed at Fitch's movements, but its effect was to deter later adventurers, and therefore *benefit* Fitch's Company, which had already done its work.

On his return to Eastern Pennsylvania, Fitch petitioned Congress for an appointment as Surveyor in the western country, backed by the reputable names of some of his associates; but, trusting too much to his attainments, he was not attentive to pushing his claims, and therefore was distanced by another. While awaiting the result of his application, he busied himself in making improvements on Hutchin's and Morrow's maps of the North-Western country, which draft he engraved on a sheet of copper, hammered and polished by himself. The map, he speaks of, as "coarsely done, portable to any one who wanted to go to the woods, and more to be relied on than any published."

Colonel Charles Whittlesey, whose life of Fitch in the second series of Sparks' American Biography has already been alluded to,—whose West-Point education and large experience as a Surveyor, give his opinions great weight,—says of this map, that "the general positions of the great rivers and lakes are given with surprising accuracy." He quotes the remarks of Fitch, to show the singular shrewdness of the man, and his extensive knowledge of the country.

During the early part of 1785, Fitch seems to have been suffering from rheumatism, and while making slow progress in walking with a friend in Bucks County, an acquaintance passed them at a rapid pace, in a two-wheeled vehicle, then known as "a chair." The speed of the horse, brought up in conversation some speculations which he had no doubt previously entertained respecting the feasibility of propelling carriages by steam. The rough condition of the roads, and the apparently greater benefits to be derived by applying the power to vessels, soon turned his thoughts to "a steam-boat." These facts were certified to in 1788, by James Scout, to whom Fitch submitted his plan of a boat in May or June, 1785; and also by James Ogilbee, the friend with whom he was walking when the thought of steam power was first spoken of. Watson's Annals of Philadelphia gives some facts furnished by Daniel Longstreth, whose father was the friend and associate of Fitch. He says: "It was in

Cobe Scout's log shop that Fitch made his model steam-boat, with paddle-wheels, as they are now used."

The model was tried on a small stream on Joseph Longstreth's meadow, about a half mile from Davisville, in Southampton Township, and it realized every expectation. The machinery was made of brass, with the exception of the *paddle-wheels*, which were made of wood by Nathaniel B. Boileau, whilst on a visit, during vacation, from Princeton College."* Colonel Whittlesey says: "The buckets of the wheels were found to labor too much in the water, entering as they did at a considerable angle, and departing at the same. They lost power by striking at the surface, and afterwards lifting themselves out of water. This led to the substitution of oars or paddles."

After due reflection Fitch, with his small resources, determined, if possible, to obtain aid from Congress,—a forlorn hope in those straitened times. He procured various letters commending his invention. One from his friend, Dr. John Ewing, of the University of Pennsylvania, bears date Philadelphia, 20th August, 1785, from which we take these words: "I have examined Mr. Fitch's machine for rowing a boat by the alternate operation of steam and the atmosphere, and am of opinion that his principles are proper, and philosophical, and have no doubt of the success of the scheme, if executed by a skillful workman. . . . The application of this force (steam) *to turn a wheel in the water*, so as to answer the purpose of oars, seems easy and natural by the machine which he proposes, and of which he has shown me a rough model. . . I hope he will meet with the encouragement which his mechanical genius deserves. His project deserves a trial," etc.

Congress was at that time sitting in New York, and, on his way there, Fitch called on Dr. Smith, of Princeton College, who gave his project a like endorsement. Under date of August 29, Fitch addressed "His Excellency, the President of Congress," the following letter: "Sir, the subscriber begs leave to lay at the feet of Congress an attempt he has made to facilitate the internal navigation of the United States, adapted especially to the waters of the Mississippi. The machine he has invented for the purpose, has been examined by several gentlemen of learning and ingenuity, who have given it their approbation.

"Being thus encouraged, he is desirous to solicit the attention of Congress to a rough model of it now with him, that after examination into the principles upon which it operates, they may be enabled to judge whether it deserves encouragement. And he, as in duty bound, shall ever pray, etc.

[Signed] "JOHN FITCH."

*N. B. Boileau was a native of Hatboro, Montgomery County, Pennsylvania; he was born in 1762, and died March 16, 1850, in Abington. He graduated at Princeton; did not study a profession, but was a gentleman of high character, and

The application was referred to a committee, which made no report, greatly to the chagrin and disappointment of the inventor. He went back to Bucks County very much incensed at the treatment he had received, but full of determination to persevere, and show that the Committee of Congress were "ignorant boys." On the 27th of September, he presented "the model, with a drawing and description," to the American Philosophical Society.

In a letter, addressed to "His Excellency, Dr. Franklin," under date of October 12, 1785, he says, "he is full in the belief that it will answer for sea voyages as well as for inland navigation," and speaks of "the good effects of the machine in the almost omnipotent force by which it is actuated, and the very simple, easy, and natural way by which the screw or paddles are turned to answer the purpose of oars." He concludes by saying that he expects "to return from Kentucky about the first of June next," and solicits Dr. Franklin's "friendly assistance in introducing another useful art into the world."

Dr. Franklin was chief among the patrons of James Rumsey, whose boat was in principle a practical adaptation of Franklin's plan, using the steam-engine to do the work of pumping in and ejecting water.

On his route west, Fitch called on Ex-Gov. Johnson, of Maryland, who advised him to call at Mount Vernon, on General Washington. The distinguished man received him with courtesy, but gave him no encouragement. Fitch says, "I believe that his greatest failure is a too great delicacy of his own honor, which we hardly can suppose can be carried to excess. The certificate which he gave to Rumsey's pole-boat was perhaps one of the most imprudent acts of his life." Arriving at Richmond, infatuated with his steam-boat scheme, Fitch was easily persuaded to seek aid from the Virginia Legislature, but no formal report was secured from the committee to which the proposal was referred. James Madison presented his memorial, and Patrick Henry was then Governor of the State. His course was altered by what transpired in Richmond, and in order to print an edition of his map for sale, under an arrangement made there, he retraced his steps to Philadelphia.

He again saw Ex-Gov. Johnson at Fredericktown, who gave him a letter, dated Nov. 25, 1785, addressed to "His Excellency, Governor Smallwood," of Maryland, in which he speaks of Fitch's "improvement of the steam-engine" for "a variety of uses," "amongst others, to force a vessel forward in any kind of water," etc. . . . He presented this letter to the Governor at Annapolis, in the latter part of December, and on the 9th of January, 1786, three days after the memorial was received, the committee of the Legislature reported as follows: "However desirous it is for liberal and enlightened leg-

an active politician; was a member of the Legislature of Pennsylvania for twelve years, and in 1817 was a candidate for Governor, but Governor Findlay was elected.

islators to encourage useful arts, yet the state and condition of our finances are such that there can be no advance of public money at present."

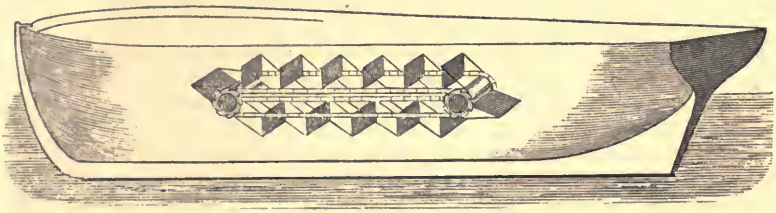
Fearing that his invention would be supplanted in some way by the efforts of a rival interest patronized by Dr. Franklin, he memorialised the Legislature of Pennsylvania for an exclusive right to propel vessels "by fire and steam," in the waters of that State. This was dated March 11, and on the next day a similar memorial was presented by one Donaldson, who "had hit upon or been informed of the method of sucking in and voiding water through a tube," as suggested to the Philosophical Society by Dr. Franklin. Without waiting further, Fitch left for Trenton, where he obtained from the Legislature of New Jersey, an act bearing date March 18, 1786, which secured to him for fourteen years "the sole and exclusive right of constructing, making, using, and employing, or navigating all and every species or kind of boats or water craft which might be urged or impelled by the force of fire or steam, in all the creeks, rivers, etc., within the territory or jurisdiction of this State."

Within a month following, Fitch had organized a company, with the number of shares fixed at forty, on many of which twenty dollars each were collected. There were, at this time, but three steam-engines in the whole country; of these two were in New England, and they had been imported from England thirty or forty years before the Revolutionary War, and the third was also imported by a Mr. Hornblower, and put up by him at the Schuyler Copper Mine, Passaic, New Jersey. Fitch was advised to visit Hornblower, to obtain, if possible, a skilled assistant; but he became acquainted, about this time, with Henry Voight, a watchmaker, who proved to be, in Fitch's estimation, "a man of superior mechanical abilities," on whom he could depend. Voight suggested that a working model should be at once made of a steam-engine, and one with a three-inch cylinder was produced, and at the same time a small skiff was prepared.

Experiments on the skiff were tried with "a screw of paddles," the endless chain, and one or two other modes, "which did not answer their expectation," and caused them to be dispirited. After a sleepless night and many cogitations about "cranks and paddles for rowing a boat," Fitch, at sunrise, sought Voight's residence, and together, after a change was suggested by Voight, they completed the scheme, so that finally "the oars worked perfectly."

In a letter to Stacy Potts, of Trenton, Fitch says: (July 28, '86,) "I completed my experiments yesterday, and find that they exceed my most sanguine expectations. * * We shall not come short of ten miles per hour." We find him saying of the model also: "It fully convinced me that the steam-engine might be worked *both ways* as well as one."

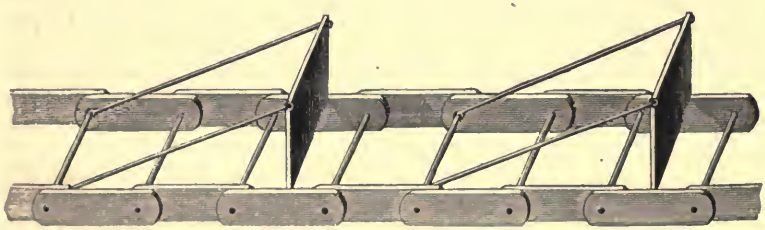
The members of the company were greatly pleased, and resolved to construct a new and larger boat, with a twelve-inch cylinder, but it was



Fitch's Model.

From Drawings deposited, Sept. 27, 1785, with Amer. Phil. Society, Philadelphia.

See page 40.



Section of Endless Chain,

With Blades, to answer instead of Paddles.

Deposited with the above, and belonging to it.

See page 40.

no easy task to secure the money necessary. Some had gone into the project originally to help Fitch, others had embarked in it as a business speculation. Funds were needed, but were not cheerfully given. All the hardships that Fitch had "experienced as an Indian captive or prisoner of war were as nothing to the distress of feeling, in raising money from my best friends." He felt himself bound in honor to go on with the work. In his extremity, he prepared a petition for aid to the Pennsylvania Legislature, in which he spoke of his plan as one that would, when completed, "enrich America at least three times as much as all that country north-west of the Ohio, because it would make that country four times as valuable, beside the inconceivable advantages it would be to the settled portions of the continent."

The committee on this petition reported in favor of paying "John Fitch's drafts to any amount not exceeding 150*l.*, on proof that the money so drawn has been applied to completing his steam-boat;" but the members of the assembly were not as well disposed, for the resolution was lost; ayes 28, nays 32. Fitch made still another effort by writing an earnest letter to General Thomas Mifflin, then Speaker, but the appeal met no response.

By this time Donaldson, Rumsey, and others, were hard at work with schemes to take from Fitch the laurels he had already gained, and he was just then for a period shorn of his best gifts for improving his invention, by the controversies in which he thought it necessary to engage, as well by the pecuniary embarassments which resulted from his endeavors to perfect his machinery. Amid much else that he wrote, he says: "The propelling of a boat with steam is as new as the rowing of a boat with *angels;* and I claim the first thought and invention of it." "I am obliged to say that I have made the greatest improvement on inland navigation that was ever made."

On the 28th of March, 1787, after much controversy over Donaldson's pretensions, the Pennsylvania Legislature ignored the latter and passed a law essentially the same as that passed by New Jersey, giving Fitch exclusive rights for steam-boats in the waters of that State. On the 3d of the previous month—February—exclusive rights were granted by Delaware, and on the 19th of March by New York.

In the Columbian Magazine, early in 1787, we find a detailed statement of the new boat. "It is to be propelled through the water by the force of steam. The steam-engine is to be similar to the late improved steam-engines in Europe, these alterations excepted. The cylinder is to be horizontal, and the steam to work with equal force at each end thereof. The mode of forming a vacuum is believed to be entirely new; also, of letting the water into it, and of letting it off against the atmosphere without any friction. The undertakers are also of opinion that their engine will work with an equal force to those late improved engines, it being a twelve-inch cylinder.

"They expect it will move with a clear force, after deducting friction, of between eleven and twelve hundred pounds weight; which force is

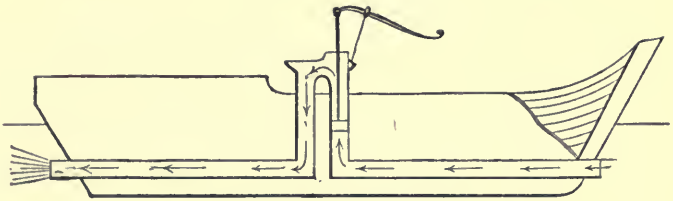
to be applied to the turning of an axle-tree on a wheel of eighteen inches in diameter. The piston is to move about three feet, and each vibration of the piston turns the axle about two-thirds round. They propose to make the piston to strike thirty strokes in a minute, which will give the axle about forty revolutions. Each revolution moves twelve oars five and a half feet. As six oars come out of the water, six more enter it, which makes a stroke of about eleven feet each revolution.

"The oars work perpendicularly, and make a stroke similar to the paddle of a canoe. The cranks of the axle-tree act upon the oar about one-third of their length from the lower end, on which part of the oar the whole force of the axles is applied. The engine is placed in about two-thirds of the boat, and both the action and the reaction of the piston operate to turn the axle-tree the same way."

The information thus given is the most connected statement now to be found of the invention of Fitch. The drawings and papers he deposited with the American Philosophical Society, long since disappeared. The models and drawings which were in the United States Patent Office were burned by the fire there in 1826. Fitch's manuscripts are full as journals, but contain no clear statement as to the manner in which the steam-engine was to be constructed.

At this time it would seem that both Fitch and Voight had become acquainted with such facts concerning Watt's engine as were accessible, but it is plainly evident that they lacked the practical knowledge of details, so important in adjusting the different portions of such a complex mechanism to each other, and did not understand the true scientific relations of boiler, cylinder, condenser, and air-pump, necessary to make a perfect whole; indeed, these relations were not then understood by even the most scientific engineers. They made experiments, and groped their way toward success as best they could, and failed of ultimate triumph, not so much for want of capital, which was deplorably wanting, but more because artisans could not be reached who were sufficiently skilled to execute what was planned.

In May, 1787, the steam-engine was completed, but "the wooden caps to the cylinder" admitted air, and being horizontal, "the piston was leaky." The machinery was all removed, and again set up, with the cylinders perpendicular, making a tedious and expensive job; and this time the condensation proved imperfect, rendering it necessary to "throw the condenser away." Other forms had previously failed and been cast aside also. Now a substitute was supplied by Voight. While these alterations progressed, the projectors and their associates were looking for success; but as one defect was remedied, another appeared. Soon the boiler was insufficient to generate a continuous supply of steam. The boat had moved three to four miles an hour, but stoppages to accumulate steam were frequently necessary. The shareholders of the company became discouraged, and some abandoned their interests. Fitch, almost in despair, was inclined to give up his

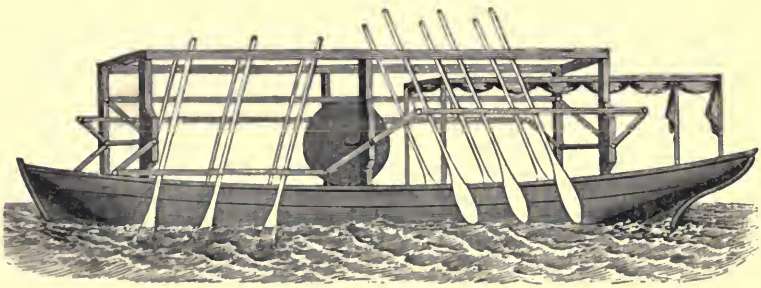


A Curious Plan of Dr. Franklin's

FOR PROPELLING A BOAT BY PUMPING IN AND EJECTING WATER.

Vide Proceedings of American Philosophical Society, Dec. 1785.

See page 39.



From "A Figure of **John Fitch's Steamboat,** *by himself,"*

(BEFORE IT WAS BUILT, AND SO WITHOUT SMOKE-STACK.)

Vide his Letter to Columbian Magazine. It was dated December 8, 1786.

See pages 41 and 42.

endeavors to perfect his invention; but finally he decided to make a new appeal for aid, from which we quote a few sentences giving his notions on some points:

"The laws of God are positive, and he that does not comply with them in the strictest sense can not expect success. His laws are equally positive in every branch of mechanism, and in all sciences. * * * I was vain in undertaking a business which I knew nothing about, that has taken nearly a century to bring to perfection,—I mean the steam-engine,—especially when it was to be applied to a different purpose from any heretofore in use. * * * It is sure that the laws of God in mechanism have permitted a steam-engine to work on board of a small boat equally as well as if it had been on land, and rowed the boat at the same time, notwithstanding we had frequently to stop, and for no other reason than for the want of steam," etc., etc.

It is not important to copy the appeal, for it is rambling and disjointed in style, and would fill several pages. It presents several points strongly however, and had enough influence upon several of the larger stockholders to induce them to furnish more money, so that the necessary alterations were completed. Sufficient steam was generated, and the machinery worked well, when the new trial occurred August 22, 1787. At this time the convention which framed the Federal Constitution was sitting in Philadelphia; its members were invited, and many witnessed the experiment, among whom were several who later complimented Mr. Fitch in flattering terms by notes addressed to him. Governor Randolph, of Virginia, "was pleased to give the invention countenance." Dr. Johnson, of Virginia, "himself, and he doubts not other gentlemen, will be happy to give him every encouragement in their power."

Duykinck's Cyclopedia of American Literature contains the following, which was taken from an entry in the diary of Rev. Ezra Stiles, of New Haven, Connecticut, dated August 27, 1787:

"Judge Ellsworth, a member of the Federal Convention, just returned from Philadelphia, visited me, and tells me the convention will not rise under three weeks. He there saw a steam-engine for rowing boats against the stream, invented by Mr. Fitch, of Windsor, in Connecticut. He was on board the boat, and saw the experiment succeed."

We also append the following certificates from distinguished men:

"These may certify that the subscriber has frequently seen Mr. Fitch's steam-boat, which, with great labor and perseverance, he has at length completed; and has likewise been on board when the boat was worked against both wind and tide, with a very considerable degree of velocity, by the force of steam only. Mr. Fitch's merit in constructing a good steam-engine, and applying it to so useful a purpose, will no doubt meet with the encouragement he so justly deserves

from the generosity of his countrymen, especially those who wish to promote every improvement of the useful arts in America.

"DAVID RITTENHOUSE.
[The celebrated Astonomer.]

"PHILADELPHIA, December 12, 1787."

"Having also seen the boat urged by the force of steam, and having been on board of it when in motion, I concur in the above opinion of Mr. Fitch's merits. JOHN EWING,
"Provost of the University of Pennsylvania."

"From the well-known force of steam, I was one of the first of those who encouraged Mr. Fitch to reduce his theory of the steam-boat to a practice, in which he has succeeded far beyond my expectations. I am now fully of the opinion that steam-boats may be made to answer valuable purposes in facilitating the internal navigation of the United States, and that Mr. Fitch has great merit in applying a steam-engine to so valuable a purpose, and entitled to every encouragement from his country and his countrymen.

"ANDREW ELLICOTT.

"PHILADELPHIA, December 13, 1787."

It will not be desirable or necessary here to follow Fitch through his controversies with Rumsey, by pamphlets and otherwise, farther than to assure our readers of his unwearied endeavors and of his success in showing his substantial right to claim for himself the priority as inventor of a practical steam-boat. An eminent French traveler, J. P. Brissot (*De Warville*), on his return to France, published a volume, in which, under date of Philadelphia, he says, "I went to see an experiment on board of a boat near the Delaware. * * * The inventor was Mr. Fitch. * * * His invention had been disputed by Mr. Rumsey, of Virginia, and the discussion had occasioned the publication of several pamphlets. Be that as it may, the machine I saw appeared to me to be well executed, and to answer its purpose," etc. In a note, Mr. Brissot adds what he afterwards learned in Europe about Fitch's boat. "There have been several experiments made with this STEAM-BOAT. Mr. Fitch, on one occasion, ran twenty miles in three hours; with the tide in his favor, he made eight miles an hour. This artist is unceasingly engaged in perfecting his boat. He is a modest and estimable man. In looking over the American journals of 1790, I see with pleasure that Mr. Fitch by no means abandons his invention. I learn that on May 11th, 1790, he made the run from Philadelphia to Burlington in three hours and a quarter, having the wind against him and the tide in his favor. Under these circumstances he ran seven miles an hour."

We pass over briefly what is spoken of as the "second successful

steam-boats of 1788." The controversy with Rumsey had absorbed Fitch's attention, and kept the company from finishing their boat; now, however, there was a respite, and the interests of the stock-holders were put in shape to resume work. Meanwhile, Congress had assembled in New York, in April 1789, and, under the new Constitution, in possession of powers not equaled under the old confederation, had been besieged by authors and inventors for exclusive rights, who had asked for copyrights and patent-rights, and among these applicants was Fitch, who, in getting a hearing, was troubled and harassed by almost interminable delays. In the Senate, March 22, 1790, the petition of John Fitch was read, praying that a clause providing for a trial by jury might be inserted in the bill before Congress, "to promote the progress of useful arts."

It was ordered that the petition be referred to the committee, who have under consideration the last-mentioned bill. The bill (not modified according to Fitch's request) was passed, and signed by the PRESIDENT, April 10th, 1790, thus forming the "initial point" of the U. S. patent laws. The steam-boat company began to put in place the machinery for their "new packet, passenger, and freight steam-boat," in the spring of 1790; but previous events and present complications brought quarrelsome scenes between Fitch and some of the directors. As will have been already noticed, Fitch was not an amiable man; now his temper was soured and he was not able, as he says, to overcome his disposition. "When in easy circumstances," he now says of himself, "modest to excess, can put up with any indignity, and resent in no other way than by familiarity; but when in wretchedness, haughty, imperious, insolent to my superiors, and the greater the man the more sweet the pleasure in retorting upon him in his own way."

Seven condensers had been tried, of various sorts and sizes, and had been thrown aside; of these the five smaller had worked best; the last was one of his friend Dr. Thornton's planning; but it proved radically defective, and a new one, from suggestions of Fitch, was made, which seems to have secured the end sought. Fitch was greatly elated, as the following extract will show: "April 16 [1790], got our work completed, and tried our boat again, and although the wind blew very fresh at the north-east, we reigned *Lord High Admirals of the Delaware*, and no boat in the river could hold its way with us, but all fell astern, although several sail-boats, which were very light, and had heavy sails that brought their gunwales well down to the water, came out to try us. We also passed many boats with oars, which were strongly manned and without loading; they seemed to stand still as we passed them. We also ran round a vessel (that was beating to windward), in about two miles, which had a half mile start of us, and came in without our works failing." After this, several successful trips were given to members of the company and to distinguished persons.

"The United States Gazette" of May 17th contained a notice, dated Burlington, May 11th, in these words: "The friends of science and the liberal arts will be gratified in hearing that we were favored, on Sunday last, with a visit from the ingenious Mr. Fitch, accompanied by several gentlemen of taste and knowledge in mechanics, in a steam-boat constructed on an improved plan. From these gentlemen we learn that they came from Philadelphia in three hours and a quarter, with a head-wind, the tide in their favor. On their return, by accurate observations, they proceeded down the river at the rate of upwards of seven miles an hour."

On June 16th, Governor Mifflin, with members of the Philadelphia City Council, took a trip on the new boat, and were so much pleased, that they directed COLORS to be purchased at their expense; but fearing, *as politicians*, to favor a scheme which had for four years previously been derided by the multitude, they refused to make a *public* presentation of the flags, declaring that they were given by *private* subscriptions. Such was poor human nature, so short a time after the "War of Independence," in free America! There is, perhaps, no country in the civilized world where the tyranny of what is called "public opinion" so completely over-rides the independent action of the individual man, even now at this later period, when we prate so much of our absolute freedom. Are we yet free from slavery?

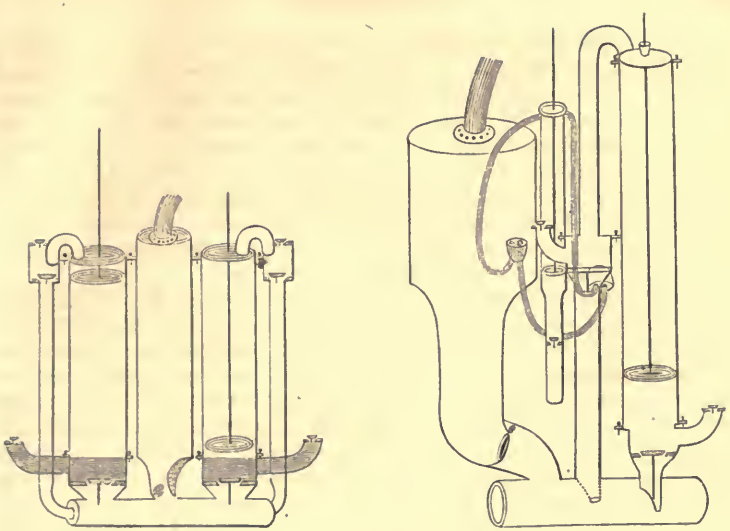
The boat was duly finished, and frequently made the trip up the Delaware and back, as appears by advertisements published in the "Pennsylvania Packet," and also in the "Federal Gazette," bearing various dates, from June 14th to the middle of September. It was announced to set off from Arch Street Ferry, in Philadelphia, every Monday, Wednesday, and Friday, for Burlington, Bristol, Bordentown, and Trenton, to return on Tuesdays, Thursdays, and Saturdays.

Averaging the trips made at twenty-five miles each, this,

THE FIRST PASSENGER STEAM-BOAT,

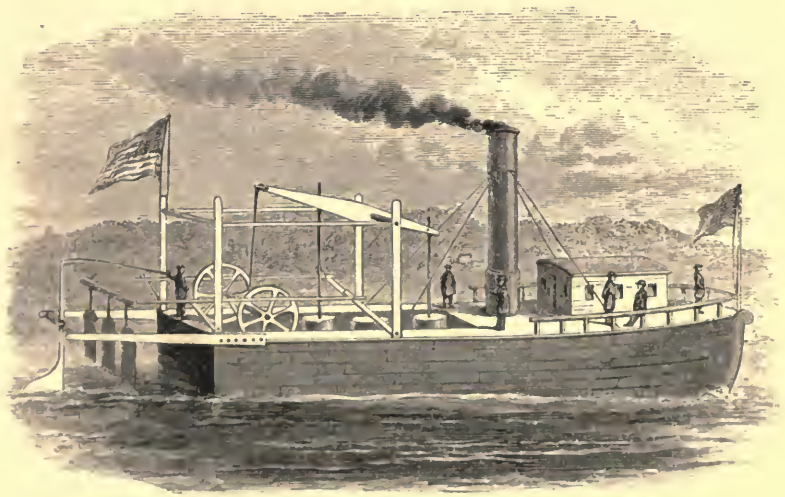
must have run, before she was laid up, between *two and three thousand miles*. That the voyages were made without material hinderances is apparent. Fitch, in his manuscript journal, charges detentions to the heedlessness of Voight, in weighing down the safety-valve, in defiance of his entreaties, and thus bringing about accidents of small importance; excepting twice, when the axle-trees were broken, there were none which were not repaired in an hour or two. The boat is said to have "run five hundred miles," on an average, without the least accident occurring. General Joseph Bloomfield, of New Jersey, testified before a committee of the New York Legislature, in 1814, that he had frequently been a passenger on Fitch's boat on the Delaware. Dr. Thornton, Fitch's former associate, stated that "our boat (Fitch's) went at the rate of *eight* miles an hour, in the presence of witnesses yet (1814) living." See U. S. Patent Office Report, 1850.

It is unnecessary to follow the fortunes of Mr. Fitch, in building the steam-boat "PERSEVERANCE" for operating in the waters of Virginia;



Cylinders, Condensers, and Air-Pumps.

From Original Drawings, deposited with Fitch's MSS. in the Philadelphia Library.



Fitch's Philadelphia & Trenton Packet.

Delaware River, 1790.—See page 49.

in seeking to have a boat built at Pittsburgh, so that, as he said, "the navigation of the Mississippi and Ohio shall be made easy;" or in his endeavors to get special privileges from the Government,—his associates had, with but three or four exceptions, deserted him. Their ventures with him had not paid, and, consequently, they had not the disposition to furnish further means. Had his personal qualities been different, he would probably have achieved success; plainly, he was dissolute in his habits, and both vulgar and violent in his language. His fondness for stimulants added fuel to the flames which burnt out his life. Had he, in the midst of the difficulties which surrounded him, been as strictly temperate as he was ingenious, skillful, and persevering, his efforts would undoubtedly have been crowned with success, and Fulton would not, twenty years later, have so nearly carried off the laurels which *he* had so nearly within his grasp.

Our aim in this sketch has been to do justice to Mr. Fitch's memory as an inventor; and, while we believe him entitled to the first honors, for applying steam to navigation, we have no apologies to make for his course of life, when the heaviness of many grievous disappointments weighed upon his mind, and caused him to feel dejected and hopeless.

Fitch finally obtained a patent, under the new law of the United States; but it did not cover the ground which he fairly had a right to claim, and he became disgusted and despairing. Patents to Fitch, Rumsey, and also to others, bore date August 26th, 1791, leaving to the parties the pleasant prospect of long and expensive litigation. While the steam-boat company and Fitch were awaiting the slow action of the Commissioners of Patents, Aaron Vail, U. S. Consul at L'Orient, France, had inspected the operations of the steam-boat, and become convinced of the value of the invention. He sought an interest in the improvement, with the view of obtaining patents in France and other parts of the continent. The majority of the company assenting, Fitch entered into an agreement with Vail, March 16th, 1791, which two years later induced Fitch to visit Mr. Vail; but arriving at the consulate in the midst of the agitations attendant upon the revolution in France, he found all business suspended. After a brief stay, "he deposited his papers and specifications in the hands of Mr. Vail, and crossed the channel to England," where he remained some time at the house of his friend, Robert Leslie, in London, with whom he had been on terms of intimacy. Mr. Leslie, as a resident of Philadelphia, had made important improvements in watches and clocks.

In 1794, after having published in London a small pamphlet on a subject connected with "keeping a ship's traverse," Fitch returned home, working his passage to Boston as a common sailor. In a state of destitution, he found his way to Connecticut, where he saw his daughter Lucy, Mrs. Kilbourne. He remained nearly two years at

East Windsor with his sister, and her husband, Timothy King, but did not, however, become reconciled to his wife.

The year before he sailed to Europe there seems to have been some correspondence with members of his family. A letter dated September 25th, 1792, was addressed to Colonel James Kilbourne, who had married his daughter Lucy. We copy, as given by Colonel Whittlesey, in his life of Fitch. "My dear child, know that I am a man of tender feelings, however my children may have been educated to form their opinions of me. No man loves his children more than myself, although I never saw but one. Forgive me for not entering into a justification of my conduct; but esteem your mother-in-law and myself, as we have both merited; but I require of you, that you treat her kindly, because she was once the wife of John Fitch. But much as I love my children, any mediation through them would be ineffectual."

Had Fitch been surrounded with the kindly influences of a pleasant home, would he have been the reckless, irritable, and dissolute man that he finally came to be? Would he have given way to the terrible temptation which resulted in his death; would he not rather have courageously combatted and overcome the difficulties which beset his path, and finally succeeded in carrying out the brilliant schemes, which his genius and observation had caused him to originate? Had he been a man of correct habits and noble *character*, would his efforts have been fruitless? We do not believe it! He might have missed his aim, in some degree, but he would not have *broken down* as he did *utterly*. He would not, in despair, have written out and *sealed up his history as an inventor*, feeling that *no one cared for him, or would do him justice.*

We here extract a paragraph from a letter dated 24th July, 1792, and addressed by him to "Thomas Jefferson, Esq.:" (which, at the suggestion of friends, was never delivered to Mr. Jefferson, but deposited with his other MS.), "I, sir, am sorry to live in a State, that no sooner becomes a Nation than it becomes depraved. The injuries which I have received from my nation, or rather from the first officers of the Government, has induced me for a lesson of caution to future generations, to record the treatment which I have received, which will, in a few days, be sealed up and placed in the Library of Philadelphia, to remain under seal till after my death, in which, sir, your candor is seriously called in question." Four days later he wrote another letter addressed to the Librarian of the Philadelphia Library, with which, was another enveloped and sealed to accompany his MS.; from the latter we extract these paragraphs: "I have two reasons for keeping it under seal for thirty years, although I must be a sufferer during that time. The first is, that the children of two valuable families might possibly be injured by it, but by that time, may probably be married, and the improper conduct of

their parents may not hurt their temporal interests, however injured I may have been by them."

Another is, that the warmth of the present age is so much in favor of the first officers of the Government, whose candor *I* have so strenuously called in question, that I much fear they would be destroyed without ever giving the world an opportunity of knowing in what manner I have been treated by them." This was dated Philadelphia, July 30, 1792.

The Library Records show this minute: "October 4, 1792. A sealed cover, inscribed manuscripts, was presented by John Fitch, who requests the same may be kept unopened until the year 1823*—the Librarian to deposit the same in the museum." Later, he inquired whether the trust was accepted, and on receiving an affirmative answer, gave further instructions—not now of special importance—who ever desires further and fuller information, should procure "*Westcott's Life of John Fitch;*" a volume of over four hundred pages, published by Lippincott, Philadelphia. Fitch's manuscripts cover over 500 pages, and may be consulted as left by him. They were deposited with the Librarian after his schemes had practically failed, and therefore whatever transpired afterwards, must be looked for elsewhere. We do not find that Fitch gave much heed to leaving further records of his movements. Mr. Westcott has, however, gathered industriously whatever he could get trace of, and we acknowledge our indebtedness. He says "the Perseverance, with the engine, nearly finished, was abandoned. The share-holders became careless upon the subject, and for four years the boat and machinery remained without change. The "General Advertiser" of August 18, 1795, announced the last act in the melancholy drama."

"A STEAM-ENGINE."

"On Wednesday, the 24th inst., will be sold by Public Vendue, on Smith's wharf, between Race and Vine Streets, (Philadelphia), a sixteen-inch cylinder steam-engine, with machinery appertaining thereto. The terms of the sale will be cash, and the sale to commence at ten o'clock in the morning. Composing the same, are, viz."—here follows the list of items: ————

After Fitch had spent two years with his sister and brother-in-law, King, at East Windsor, Connecticut, he seems to have determined to seek his lands in Kentucky, and perhaps in passing through New York, called upon, or was brought into contact with Robert R. (Chancellor) Livingston, who even then was greatly interested in steam navigation. A Mr. John Hutchings, mentioned in the Documentary History of New York, says that in the summer of 1796 or 1797, he then a lad, assisted Mr. Fitch in steering a steam-boat, and otherwise aiding in the working of the machinery. The boat was

* They were opened formally by officers of the Library in 1823.

navigated upon "the Collect," a large pond of fresh water,—since filled up,—on a portion of the site of which now stands (The 'Tombs'), the present city prison, between which and Canal Street was the space then covered with water.

"This boat was propelled by *a screw-propeller*. The boiler was a ten or twelve gallon iron pot, with a lid of truck-plank, firmly fastened to it by an iron bar placed transversely. The boat was a ship's yawl, steered by an oar." Mr. Hutchings says "the steam was sufficiently high to propel the boat once, twice, or thrice around the pond; when, more water being introduced into the boiler or pot, and steam generated, she was again ready to start on another expedition. . . . . They had no doubt but that the boat might be propelled six miles an hour, though then making something less.

From New York, Mr. Fitch went to Philadelphia, and called to see his acquaintances, among whom was Oliver Evans, whose later improvements of the steam-engine are well known to the scientific world. Upon arriving in Kentucky in the late fall; or early winter of 1796, Fitch found fresh occasions for annoyance and trouble in the occupancy of his lands by Squatters; it is gratifying, however, to know that, after much litigation, he finally dispossessed them.

Here, as Colonel Whittlesey says, "on the confines of civilization, steam navigation lost none of its interest to him." At Bardstown, in the shop of Mr. Howell, he wrought upon a model boat, and constructed its machinery of brass, and polished each part neatly. It "had wheels, and not oars," and had been seen floating in a small stream near the village, by persons who were residents of Bardstown, in 1843.

This model engine was years with the St. Louis Mercantile Library Association, and by the kindness of L. J. Cist, Esq., of Cincinnati, we are enabled to give an engraving from a photograph he has of the machine.* It came to the Library Association through the agency of a relative of Mr. Fitch,—Mrs. C. M. Scott.

The will of John Fitch bears date June 25, 1798, and "was produced" in the County Court of Nelson County, Kentucky, for probate, on the 18th day of July following. He died, as seems probable, early in July, immediately, from the effects of opium, which had been prescribed by his physician, but which he concealed until he had retained twelve pills to swallow at once, and thus quietly he ended his fretted and weary life. He was very intemperate during his residence in Bardstown. Soon after reaching there, he took lodgings with Alexander McConn, and deeded to him one hundred and fifty acres of his land, stipulating with him that he should, besides giving him his board at his tavern, provide him with a pint of whisky a day: this ration, Fitch afterwards remarked to McConn, was "not getting" him "off fast enough; you must add another pint," said he, and

* See page 55 for an interesting fac-simile letter of Fitch.

then doubled his quantity of lands to secure the quart a day. A sad record to make of so bright a genius.

His remains were buried respectably in the public burying ground of the place, at the expense of his landlord; who, many years afterwards, at the request of the Hon. Robert Wickliffe, identified the spot where his remains were interred. Since then the place was accurately described by citizens who caused the description to be filed with his will, that the remains may hereafter be found, if the place of burial is not now marked, as has been affirmed by some one, "by a rough, unhewn, unlettered stone."

"Would it ever have been difficult to find the grave of Fitch," in the words of Whittlesey, if he, when building his steam-boats, had found a Robert R. Livingston to aid him with a large capital. Or even had his Engines been made by skilled mechanics at an establishment like that of Boulton & Watt, at Soho, instead of being made as they were, with his boilers and other machinery, by rough blacksmiths, without proper tools or apparatus, under the superintendence of an Inventor who had never seen an Engine of any sort, but such a miniature one as he had coined from his own brain, and produced with his own hands,—would Fitch have wandered to the wilds of Kentucky, and died almost an outcast, had he possessed the facilities for perfecting his machinery which were afforded to Fulton twenty years later?

Chancellor Livingston was an ardent worker in the domains of Steam. As early as 1797, assisted by Nisbet and Brunel, he had succeeded in propelling a vessel by steam on the North River, at the rate of nearly three miles an hour, and, by virtue of his efforts, the following year he obtained the repeal of the law passed in 1787, giving Fitch exclusive rights in the waters of New York, and secured its privileges for himself. Livingston in this law, is described as a "possessor of a mode of propelling boats by steam, upon new and advantageous principles," and not as an inventor. When Livingston had joined Fulton, it took them several years to attain the speed called for by the terms of the New York law, and to equal that attained by Fitch on the Delaware, more than twenty years earlier.

No one can reasonably question that Fitch's steam-boats were the first vessels successfully propelled by steam. Fitch, on the Delaware, anticipated Symington & Taylor's Dalwinston boat two years, and Rumsey by his small one on the Potomac by ten months. English writers affirm that the Charlotte Dundas, built by Symington, in 1801, for the Forth and Clyde Canal, was the first "practical steam-boat" built in the Kingdom; but, strange to say, his vessel was soon laid aside and never again used. Fitch's skiff-boat, moved by the model engine, with three-inch cylinder, in July, 1786, was followed in August, 1787, by the large boat propelled by an engine having a twelve-inch cylinder. Passages were made several times up and down the Delaware in the summer and autumn of 1788, and the next season there were other

trials. When 1790 came and the machinery had been perfected, the steam-boat became a regular packet, and carried both freight and passengers with regularity and promptness, for several months, with the few exceptions before referred to.

Mr. James Rumsey went to England in 1788, probably with the intention of securing patents for himself, and with a view, no doubt, to make available the greater facilities to be found there for perfecting steam machinery. He was fortunate in securing the aid of a wealthy American merchant in London, but before completing his vessel, he suddenly died of apoplexy, on the 24th of December, 1792. His vessel was successfully moved by steam the February following, but for some reason not now known the project was abandoned. The bitter controversies between himself and Mr. Fitch, by pamphlets, and before Congressional and other Committees, were ended, it will be remembered, by patents being granted to each, with the pleasant privilege left of future litigations in the Courts. Neither one or the other, for themselves or by their heirs or representatives, ever obtained any pecuniary return whatever for their efforts in steam navigation. It will be seen that Fitch's efforts were not without avail to those who came after him.

Thus far we have neglected to speak of Mr. Fitch's personal appearance. He was represented in middle life as standing six feet two inches in height, of thin and spare person and face, with very black hair, tawny complexion, and a dark and very piercing eye. When he walked he was straight as an Indian, and when wearing moccasins, as he did when in captivity and on the frontiers, his tread could not be distinguished from that peculiar to the denizens of the forest. He was fond of walking, and made his long journeys to and from the West in that way. His personal bravery and intrepidity in scenes of danger were evinced on various occasions throughout his eventful career. They were shown before he was six years of age, in his hasty transfer to the chimney hearth of burning bundles of flax which had caught fire from a candle in the hands of his younger sister, when displaying to him some presents which she had received. He burnt his hands and feet badly, and nearly singed the hair from his head, but bravely saved his father's house from the flames, by his noble conduct, when there was no one else in the house who could have done it. Amid all his misfortunes there is much to indicate that he was truthful, fair-minded, and upright in his intercourse with men. His letters to his children manifest much warmth of affection. Perhaps we do not err in saying that his sensitive nature received a bias from the events which followed the death of his mother, before he was five years of age, from which his later training and experiences in no degree relieved him. He passed from the scenes of earth at the age of fifty-five, in the midst of comparative strangers, and among those who, under the circumstances, could have but little sympathy for him.

I have given my Country a most Valuable Discovery
on the 22 of August 1785, for which I have received no Compensation, and I doubt not but common justice will induce them
to do something for me, especially when they can do it for the
benefit of our Empire ——

Another inducement which urges me to pursue this
Scheme is, to put it out of the power of future Generations to
make enemies for the present one —— and if I should die in
penury, want, wretchedness and Rags, that my country may
have no cause; and that I may have the secret pleasure, on
the Contemplation of receiving real gifts from future
Generations

all which is humbly submitted to the Company

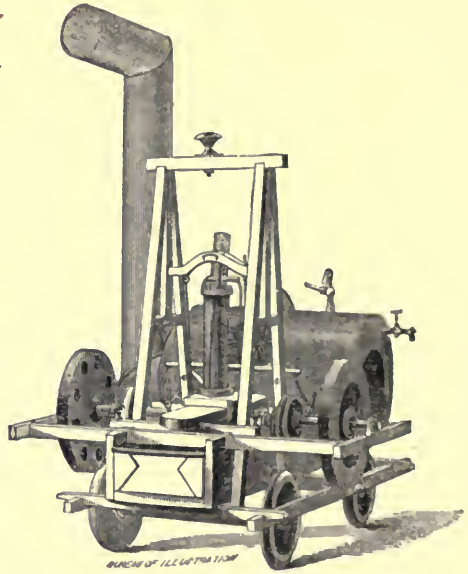
By

25 Dec.r 1790

John Fitch

A FAC-SIMILE

REDUCED BY PHOTOGRAPHY FROM FITCH'S MANUSCRIPT IN THE PHILADELPHIA LIBRARY.



Bardstown Model Engine

LEFT BY FITCH.—See page 53.

ROBERT FULTON.

ROBERT FULTON, one of the most deservedly famous of modern Engineers, was born in the town of Little Britain, State of Pennsylvania, in the year 1765. His family, though respectable, was not opulent, and the patrimony which fell to him as the elder of two sons, on the death of the father in 1768, was very small. He received his early education in Lancaster, Pennsylvania, and displayed, even from childhood, a strong taste for those pursuits in which he afterwards acquired celebrity.

All the intervals of study, dedicated usually by boys to play, were spent by young Fulton in the workshops of mechanics, or in the use of his pencil; and by the time he had reached the age of seventeen, he had become so skillful in drawing, as to obtain a considerable income by painting portraits and landscapes in Philadelphia, in which city he remained until he came to his majority.

In 1786, Fulton went to his native district to visit his mother, and had the pleasure of purchasing for her, with his earnings at Philadelphia, a small farm in Washington County, which greatly increased her comforts for the remainder of her life. Having effected this labor of love, he set out to re-establish himself at Philadelphia, but met some gentlemen by the way, who were so much struck by the production of his pencil, as to advise him strongly to go to England, assuring him that there he could obtain the patronage of his countryman, Benjamin West—then in high favor as a painter with the British public. Fulton followed the counsel thus accidentally given to him. At the age of twenty-two, (1787), he crossed the Atlantic, and presented himself before Mr. West, who received him with the utmost kindness, and installed him at once as an inmate of his own family. Here Fulton continued for several years, practicing the art of painting under the eye of his friendly entertainer.

Owing to the loss at sea, some years afterwards, of a number of his manuscripts, it is not accurately known for what reason he gave up the profession of an Artist for that of an Engineer. It would appear that he went to Devonshire in the character of a painter, and

spent two years there, during which time he became known to the Duke of Bridgewater, of canal celebrity, and to Lord Stanhope, a nobleman famed alike for eccentricity and mechanical genius. The formation of such acquaintances possibly led to the alteration in Fulton's views for the future. Whatever was the cause, we find him, from the year 1793 downwards, devoting his whole mind and time to improvements in the mechanic arts. In the year mentioned, he engaged actively in a project to improve inland navigation, and in May, 1794, he obtained from the British government a patent for a double inclined plane, to be used in transporting canal boats from one level to another without the aid of locks.

In the same year he submitted to the British Society, for the promotion of arts and commerce, an improvement on mills for sawing marble, for which he received an honorary medal and the thanks of the society. He also obtained patents for machines for spinning flax and for making ropes; and invented a mechanical contrivance for scooping out the earth, in certain situations, to form the channels for canals or aqueducts. To conclude the account of his labors at this period in England, he published, in 1796, his treatise on canal navigation, to which he appended his name as a professed Civil Engineer. This work, it was admitted by all, contained many ingenious and original thoughts on the subjects of which it treats. Whether these fruits of his genius were productive of much emolument to Mr. Fulton, does not seem to be well ascertained. In the year following the publication of his treatise, he left England and went to Paris, where he took up his residence with his distinguished countryman, Joel Barlow.

The objects to which Fulton's mind chiefly directed itself, during his seven years' stay in France, were of a remarkable cast. "Under the impression that, while individual countries maintained standing navies, the seas could never be the scene of secure and peaceful commerce, I turned," says he, "my whole attention to find out the means of destroying such engines of oppression, by some method which would put it out of the power of any nation to maintain such a system, and would compel every government to adopt the simple principles of education, industry, and a free circulation of its produce."

This explanation refers to his schemes for destroying ships of war, by passing explosive machines secretly beneath them. After several fruitless attempts to call the attention of the French and Dutch Governments to his plans for this purpose, Fulton was at last successful in inducing Bonaparte, in the year 1801, to appoint a commission, with a view of inquiring into the practicability of his designs. Having gone to Brest, accordingly, Mr. Fulton there exhibited his machines. One of these was a plunging boat (called by him a Nautilus), made water-tight in part, and otherwise so constructed, that, with three companions, the inventor could remain in it for four or five hours at the depth of many feet *below the surface of the water*, and could there

propel it from place to place with great ease, without a ripple being seen above. At the same time the Nautilus could sail as readily above as beneath the water, its sails being struck when the plunge was made. The other machine was named by the inventor, a Torpedo, and was merely a sub-marine bomb, which could be exploded in the water. Mr. Fulton showed to the commission these engines in actual operation, by remaining for four hours in the water, and shifting from place to place in the Nautilus, and by blowing a shallop to atoms with the Torpedo. He made it clear that, with a little flotilla of these Engines, a vast fleet, under favorable circumstances, could be blown in pieces into the air.

After these experiments were made, an opportunity was sought of trying their effect on some of the British vessels, then hovering around the French coast. No proper chance, however, presented itself, and the French Government became tired of the matter. At this juncture, the British ministry, who had heard with some alarm of Mr. Fulton's projects, made proposals to him to give his services to Britain. Sincere in his belief that, wherever put in force, his inventions would ere long bring to an end the war system of Europe, Mr. Fulton conceived himself at liberty to accept of the invitation from the British Government. He went to London in May, 1804; but his journey was productive only of disappointment. In the single opportunity afforded him of trying his machines on French vessels, they failed of success. The British ministry also changed members, and in 1806 Mr. Fulton sailed for America. It is impossible to regret, for his own sake, that such was the issue of these schemes of destruction, though, at the same time, we are firmly of the opinion that his motives were pure, and that his anticipations would have been ultimately fulfilled. This notice of Fulton's explosive inventions may be closed, by mentioning that he endeavored afterwards to apply the same engines to the defense of the United States, but did not succeed in extracting from them any practical benefit.

We come now to notice the great achievement of Fulton's life. For many years previous to this period, his attention had been turned to the subject of Navigation by Steam, as is distinctly shown by the following passage of a letter to him from Lord Stanhope, dated October 7, 1793: "Sir, I have received yours of the 30th September, in which you propose to communicate to me the principles of an invention which you say you have discovered, respecting the moving of ships by means of steam. I shall be glad to receive, etc." This letter shows Fulton, thus early, to have formed plans for steam navigation. The application of steam to the propulsion of vessels on water had been suggested long before by Jonathan Hulls, in a little work published in London in 1737. Though this person's description of the machine invented by him is amazingly clear, and though he took out a patent for it, the attention of the world does not appear to have

been arrested to the subject. The idea dropped aside for nearly fifty years.

It will be remembered that Fulton was a resident of Philadelphia, in the practice of his profession as an artist, during the early years of his manhood. The city directory for 1785, gives his business as that of miniature painter, corner of Walnut and Second Streets. He remained there until 1787 when he sailed for London. Previous to his departure, Fitch's invention must have been well known to so intelligent a resident of the city as young Fulton, even supposing that the applications of Fitch to the Legislatures of Virginia, Maryland, Pennsylvania, and New Jersey, in behalf of his invention, were unknown to him, as they might have been to one who had but little more than attained his majority. Whatever Mr. Fulton may have learned before going to Europe, it is certain that he had in his possession, for several months, all the specifications and drawings of Mr. Fitch, which the latter deposited with Mr. Aaron Vail, the American Consul at L'Orient, France, at the close of Mr. Fitch's brief visit to him at the consulate in 1793.*

About 1785, Patrick Miller, Esq., of Dalwinston, in Dumfriesshire, Scotland (a gentleman who had made a fortune by banking, and bought that estate, made experiments with a double vessel driven by paddle-wheels.) The tutor of his children, James Taylor, a native of Leadhills, Lanarkshire, and a man of much mechanical ingenuity, suggested the application of the steam-engine to Mr. Miller's paddled vessel; and the consequence was, the preparation of a vessel, having a small steam-engine on the deck, which was launched in Dalwinston Lake, in October, 1788. A clever mechanician named Symington, an early friend of Taylor, was the person to whom the fitting up of this vessel was intrusted. Afterwards, at the expense of Mr. Miller, and under the superintendence of Mr. Taylor, Mr. Symington made another vessel, which was tried on the Forth and Clyde Canal, in December, 1789, with such complete success, that, but for the injury done to the banks, it in all probability would never have been taken off. The disgust of Mr. Miller with the expense of this experiment, was the means of withdrawing him and Mr. Taylor from the pursuit of an interesting object, which was then followed up for some years by Symington alone.

Mr. Fulton, when on a visit to Scotland, saw and examined the Charlotte Dundas, a boat made by Symington, which, it is said, was lying in a dismantled state on the banks of the Forth and Clyde Canal.† However this may be, it is certain that the first decisive experiments of the same nature made by Fulton himself, did not take

* See Duer's second letter to Colden—quotation from Nathaniel Cutting.

† Woodcroft, in his history of Early Steam Navigation—pages 64 and 65—shows that in 1801, Fulton visited Symington's boat on the Clyde Canal, and took drawings of the machinery.

place until the year 1803, when he was resident in Paris. In the intervals which his torpedo schemes allowed to him, he prosecuted ardently the subject of steam navigation, in concert with the American embassador, Mr. Robert R. Livingston. In July of the year mentioned, their first experimental boat, which was sixty-six feet long by eight feet wide,* and was driven by wheels, was launched on the Seine, in presence of the members of the French Institute and a great concourse of spectators. The boat moved slowly, but in other respects the experiment was satisfactory, and Messrs. Fulton and Livingston resolved to carry the same principles into practical operation as soon as they met in their native country.

Fulton went to England, where he, no doubt, procured the Watt's Engine, which he used in his first boat, probably taking it with him to New York in 1806. Previously to that time, Mr. Livingston had got an act passed by the Legislature of New York, granting to himself and Mr. Fulton the exclusive privilege (originally granted to Fitch) of steam navigation, in all the waters of the State, for the term of twenty years. Though they passed this statute, the Legislators of New York are said to have regarded it as a mere delusion, and made it a standing jest for more than one session. Similar feelings of scorn and derision pervaded the minds of the public at large. Notwithstanding this, Fulton, immediately on his arrival in New York, began the construction of his steam-boat. The expense proved to be great, and he was compelled to offer a share of the prospective advantages to some of his friends, with a view of getting pecuniary aid in the mean time. No man would accept his offers. "My friends (as he himself relates) were civil, but shy; they listened with patience to my explanations, but with a settled cast of incredulity on their countenances; I felt the full force of the lamentation of the poet:

> Truths would you teach, to save a sinking land,
> All shun, none aid you, and few understand.

"As I had occasion to pass daily to and from the building-yard while my boat was in progress, I have often loitered, unknown, near the idle groups of strangers gathering in little circles, and heard various inquiries as to the object of this new vehicle. The language was uniformly that of scorn, sneer, or ridicule. The loud laugh rose at my expense, the dry jest, the wise calculation of losses and expenditures, the dull but endless repetition of 'the Fulton Folly.' Never did a single encouraging remark, a bright hope, or warm wish, cross my path."

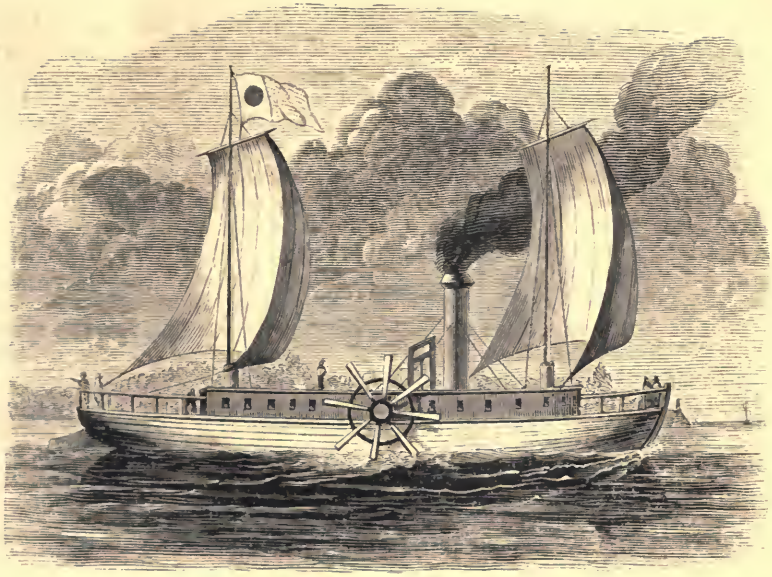
In spite of this painful discouragement the boat was completed in August, 1807. To continue his own language, "The day arrived when the experiment was to be made on the Hudson River. To me it was the most trying and interesting occasion. I wanted some friends to go on board to witness the first successful trip. Many of

* The proportions adopted by Fitch, as shown by Dr. Thornton.

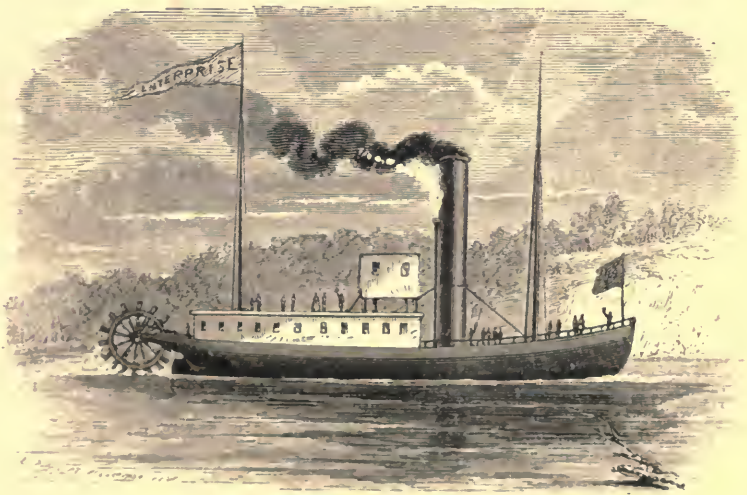
them did me the favor to attend, as a matter of personal respect; but it was manifest they did it with reluctance, fearing to be partners of my mortification, and not of my triumph. I was well aware that, in my case, there were many reasons to doubt my own success. The machinery was new and ill made, and many parts were constructed by mechanics unacquainted with such work: and unexpected difficulties might reasonably be presumed to present themselves from other causes. The moment arrived in which the word was to be given for the vessel to move. My friends were in groups on the dock. There was anxiety mixed with fear among them. They were silent, sad, and weary. I read in their looks nothing but disaster, and almost repented of my efforts. The signal was given, and the boat moved on a short distance and then stopped, and became immovable. To the silence of the preceding moment now succeeded murmurs of discontent and agitation, and whispers and shrugs. I could hear distinctly repeated, 'I told you so,—it is a foolish scheme,—I wish we were well out of it.' I elevated myself on a platform and stated that I knew not what was the matter, but if they would be quiet, and indulge me for half an hour, I would either go on or abandon the voyage. I went below and discovered that a slight maladjustment was the cause. It was obviated. The boat went on; we left New York; we passed through the Highlands; we reached Albany. Yet even then the imagination surpassed the force of fact. *It was doubted if it could be done again, or if it could be made in any case of any great value.*" Mr. N. P. Willis, in quoting this letter, exclaimed, "What an affecting picture of the struggles of a great mind, and what a vivid lesson of encouragement to genius, is contained in this simple narration."

Pine wood was the fuel used, and the ignited vapor rose many feet above the flue, sending off a galaxy of sparks to a great height, so that those who saw the boat returning at night at the rate of five miles an hour, conceived her to be a monster moving on the waters, breathing flames and smoke. It was said that the crews on the ordinary vessels on the river, hid themselves under decks and fell to their prayers. But the good people on the Hudson ere long became familiar with the spectacle, for the "Clermont" soon began to travel regularly, as a passenger boat, between Albany and New York.

Thus, by the genius and perseverance of Robert Fulton, for the first time, on a great line of travel, was steam navigation made effectually conducive to the common purposes of life. He soon afterwards took out a patent for his invention in navigation by steam; but all his exertions could not save him from the encroachments of others on the rights to which he laid claim. A series of vexatious lawsuits was the consequence, by which his life was long embittered. He was two or three years in getting sufficient speed to fulfill the requirements of the New York law. This law was hotly contested by Aaron Ogden, of Elizabethtown, N. J., but a shrewd compromise



Steamer "Clermont," 1807—Fulton's First Boat. (Hudson River.)



French's Steamer "Enterprise," 1814.
First Boat to ascend Mississippi and Ohio Rivers.

was effected, which gave Ogden such an interest in the monopoly for running boats to New York as made him a sturdy defender of the special privileges of Fulton and Livingston.

Not long afterwards, a wealthy lawyer of Savannah, Ga., (Thomas Gibbons), successfully established a ferry between what is now called Elizabethport and New York. This brought about the celebrated lawsuit of Gibbons vs. Ogden. The case was finally carried to the Supreme Court of the United States, which decided the New York law to be unconstitutional. It may interest our readers to know that it was on these steam-boats that the celebrated Commodore Vanderbilt commenced his career. Previous to 1830 he was Captain of one of them. His connection with Gibbons brought under his control large sums of money, which he used advantageously after that gentleman's decease.

In 1811 Fulton built two steamers as ferry-boats, for crossing the Hudson. The succeeding year, the example was followed by Mr. Bell, of Helensburgh, Scotland, who launched a steam vessel on the Clyde, the first used for the service of the public in the old hemisphere. Various steam-boats were, after an interval, built under the directions of Fulton, for the navigation of the Ohio, Mississippi, and other waters of the United States.

In the month of April, 1809, Nicholas J. Roosevelt was sent to the West by Fulton and Livingston, to survey the rivers from Pittsburgh to New Orleans, with a view to the introduction of steam navigation; his report was favorable, and ultimately, in the early autumn of 1811, the steamer "Orleans" was finished at Pittsburgh. She left Pittsburgh on her experimental voyage in October, without freight or passengers, excepting the young wife and family of Mr. Baker, the engineer, a few domestics, Andrew Jack, the pilot, and six hands. There were no wood-yards on the rivers, therefore there were constant delays to obtain fuel.

On the fourth day after leaving Pittsburgh, however, they arrived safely at Louisville, having voyaged nearly seven hundred miles in about seventy hours; the novel appearance of the vessel, and the rapidity of its movement over the broad reaches of the Ohio, excited a mixture of terror and surprise to many of the settlers on its banks. Most of them had probably never heard of the invention. It is related that the boat reached Louisville on a fine, still, moonlight night. The extraordinary sounds produced by the escaping steam, while rounding to, caused general alarm, and brought multitudes from their houses to ascertain the cause of the strange phenomena.

The low water on the falls at Louisville prevented the boat from pursuing her voyage to New Orleans, and resulted in several trips being successfully made between Louisville and Cincinnati, during the detention of three or four weeks. In November the water rose sufficiently to allow the boat to go over the falls. In due time they moored the boat opposite the first vein of coal on the Indiana side;

they found a considerable quantity of coal ready for use, with which they proceeded to supply the boat. Squatters in the neighborhood accosted them in great alarm, asking if they had not heard strange noises on the river and in the woods during the preceding day. They assured the boatmen that the shores had shaken and the earth trembled. Hitherto the voyagers had perceived nothing extraordinary, and the following day nothing occurred to break the monotonous silence of those vast solitudes. The weather was observed to be oppressively hot, the air misty, still, and dull, and, though the sun was visible, it was like a great ball of copper, his rays shedding scarcely any more than a mournful twilight on the surface of the water. As evening approached, indications of what was passing became evident. Sitting on the deck, ever and anon they heard a rushing sound, a violent splash, and saw large portions of the shore tearing away from the land, and falling into the river.

The day following, the same portentous signs continued. The pilot of the boat became alarmed and confused, affirming that he was lost, as he found the channel every-where altered. Where he had hitherto known deep water, lay numberless trees swaying, with their roots upwards. On the banks, trees were waving and nodding, without a breath of air to stir them; but the adventurers had no choice but to continue their route. Usually they had brought to under the shore, but now the numerous wrecks of flat-boats and rafts warned them away from the shore. In his extremity the pilot determined to land at a large island in mid-channel; but he sought it in vain, for it had entirely disappeared. Just at night-fall they discovered a small island, they rounded to, and moored at the foot of it. They listened watchfully to the roaring and surging waters during the long autumnal night, noticing with solicitude the commotions produced by the falling of large masses of earth and trees into the rushing waters of the river. It was a long night; but morning dawned and showed them they were near the mouth of the Ohio River. The passing earthquake had been distinctly felt on the vessel; but the changes in the channel and on the shore kept the pilot from recognizing either, for considerable periods of time.

About noon they reached New Madrid, Missouri, and found its inhabitants in great distress and consternation; portions of the population had fled to the higher grounds, while others prayed to be taken on board the boat. The earth was opening in great fissures on every side, while houses were hourly falling. Such were the scenes that greeted the eye and roused the sensibilities of those who made the first steam voyage on the bosom of the Mississippi. Often they floated three or four hundred miles on that great stream, without seeing a single human habitation. The citizens of Natchez were greatly surprised at the appearance of the boat, at the close of the first week in January, 1812. It was supposed that she must have been wrecked in the great convulsion which had occurred. Here we

close our episode; but give a few facts concerning this and other boats on the Western rivers.

By the kindness of Robert Buchanan, Esq., of Cincinnati, we here insert some very interesting facts which he furnished:

"In the spring of 1811, I was residing at Pittsburgh, and saw there the first steamboat launched on the Western waters. It was the 'Orleans,' built for Fulton & Livingston, under the superintendence of Mr. Roosevelt. In 1809, Mr. R. had examined the rivers from Pittsburgh to New Orleans, and reported favorably. The boat was of about 200 tons, with a low-pressure engine.

"In the autumn of 1811 I saw this steamboat pass down the Ohio, on her way to New Orleans. I was then in a store at Fawcetstown, now Liverpool, Ohio, about forty-eight miles below Pittsburgh.

"I well remember the alarm created by its sudden appearance. Few had heard of the boat, and none expected it. With its lever beam moving up and down, it looked like a floating sawmill, for the cabin was below, and no upper works on the deck. With our townspeople, it was a source of marvelous relation to the surrounding neighbors for years afterward.

"During the same autumn, we had another incident to relieve the dull monotony of village life. The news of the battle of Tippecanoe reached us, and, as usual, the story had lost nothing by traveling. We had wonderful rejoicing on the occasion. Guns were fired, runners were sent out, and the people came flocking in from the surrounding country to hear the news. The consumption of gunpowder and whisky was, of course, large, and, toward the close of the ceremonies, several of the citizens became quite fatigued with their patriotic efforts.

"In December, 1811, I went back to Pittsburgh, and witnessed the great alarm caused by the earthquakes in that month. A few years afterward, I saw their effects on the country around New Madrid, where they were more disastrous than at any other point in the Mississippi Valley.

"The next boat built at Pittsburgh was the 'Vesuvius.' I saw her launched in the autumn of 1813—I think in November. I also saw the little steamboat 'Enterprise,' built at Brownsville, pass down, late in the year 1814, and witnessed her return to Pittsburgh in the spring of 1815. She was the first boat that reached that place from New Orleans, and caused an immense sensation at the time. Many said then, 'Good-bye to keel-boats and barges;' but others thought the new experiment in navigation would not succeed.

"The steamboat 'Ætna' was the next. She was built at Pittsburgh in 1814, and in 1815 was employed as a tow-boat below New Orleans. In the fall of the same year she made a trip to Louisville in sixty days, having lost about thirty by breaking of her machinery and other detentions. This was the first large boat that came up to Louisville from New Orleans. From this period until 1821 I was conversant

with the movements of all the steamboats on the Western waters, for they were few in numbers and soon told."

Fulton gave his valuable assistance to the construction of the Erie Canal and other public works. After war was declared between Great Britain and the United States, in 1814, Mr. Fulton again directed his attention to the subject of torpedoes, sub-marine guns, and other instruments of the kind; but none of his schemes were ever brought into practice.

He erected, however, a steam-ship of war (named "Fulton the First"), of such size, that several thousand men might parade on her deck, and capable of throwing an immense quantity of red-hot shot from her numerous port-holes. But when the engineer of this magnificent structure had nearly seen it completed, he was removed from his country and his friends. Having exposed himself too long on the deck of his steam-frigate, in bad weather, he was seized with a severe pulmonary affection, and died on the 24th of February, 1815.

We have no desire to depreciate the fame of Mr. Fulton, but he acquired his reputation very largely from fortuitous circumstances. His wealthy associates in steamboat projects had long been struggling for success, and knew their interests were deeply involved in his and their achieving it; they, therefore, found it convenient for them to write him into fame. His career with the steamboat was but for a few years in middle life, and it was cut short by a sudden and rapid illness. His wife was Miss Harriet Livingston; family influence coupled with the final success of steam navigation under his nominal leadership led to the deification of his memory to an extent that can scarcely be accounted for on any rational basis, now that we know the facts as to the originality of his so-called invention.

In person, Mr. Fulton was tall and well proportioned. He was an excellent man in his private character, being generous, affectionate, and humane. To *him*, rating his deeds even as low as some critics would make them, the human race owes much. The waters of half the world are now covered with models of that admirable machine which sixty years ago he successfully set afloat on the waters of the Hudson, never more to cease moving; and now the journey between the Old and New World, whether across the Atlantic or Pacific, is, by the same means, made a pleasure trip of a few summer days. Steam vessels float constantly in all the great routes of commerce. Whether in the North Sea, the Mediterranean, or on the Indian Ocean; whether on the Ganges, in the Amoor, on the Danube, the Thames, the Nile, or the Niger,—on the Amazon, the Mississippi, Missouri, Yellowstone, the Columbia, or the Ohio,—on the great inland seas of America or the Old World,—steam is all-powerful and ubiquitous; on sea and on land it is the servant of man.

Henry M. Shreve

FRENCH AND SHREVE

WERE leading names in early steamboat navigation on the Ohio. It is a curious fact that two years prior to the date of Fulton's patent, in 1811, Daniel French, of New York, obtained a patent for a steamboat and engine, October 12th, 1809. Fulton had probably felt himself comparatively safe under the special privileges of the New York and Louisiana statutes. It was in the early spring of 1809 that Nicholas J. Roosevelt, in the interest of Fulton, visited Pittsburgh, and commenced his investigations, looking to the navigation by steam of the Ohio and Mississippi. It was, however, not until twenty months after the "Orleans" had started on her trip to Natchez that the first small experiment of French's was completed at Pittsburgh. The "Comet" was built by Samuel Smith, on the plans of French, with a stern wheel, and with what he called a vibrating cylinder. Her first trip was to Louisville and back in the summer of 1813. The following year she took her departure, early in the spring, for New Orleans, and in July started on her return, but grounded on a sand bar several hundred miles up the river, where she remained until floated off by high water in December. The two following years, 1815–16, she took the place of the "Orleans," in the Natchez trade. She was partially burned opposite New Orleans, but was rebuilt, and made several trips to the falls at Louisville, but finally closed her career in the Natchez trade, in 1820.

Another boat, the "Enterprise," is stated in *Farnsworth's Cincinnati Directory*, of 1820, to have been built at Brownsville, Penn., of forty-five tons burden, by French, under the same patent, and to have made two voyages to the falls at Louisville in the summer of 1814, under the command of Captain I. Gregg. One of the stockholders in the "Enterprise" was Captain Henry M. Shreve. He was absent on a trip to New Orleans, in command of a barge of his own, when the steamer was finished, and, therefore, it was placed temporarily under command of Gregg. Up to about this

time—according to a lecture delivered by Judge James Hall, of Cincinnati, thirty years later—"the whole commerce from New Orleans to the upper country was carried in about twenty barges, averaging one hundred tons each, and making but one trip in the year; so that the importations through New Orleans in one year could not much have exceeded the freight by one of our largest steamers in the course of the season. On the Upper Ohio there were about one hundred and fifty keel-boats of about thirty tons each, which made the voyage from Pittsburgh to Louisville and back in two months, or about three such trips in a year." Dr. McMurtrie, of Louisville, says "there were only six keel-boats and two barges owned on the Ohio river in 1806; in connection with the flat-boats and pirogues in use, they then sufficed for the entire carrying trade of the river."

These flat-boats, or arks, were usually built of green oak planks, rudely pinned together in such a manner as to answer for the descending voyage to New Orleans, or elsewhere, when they were abandoned, and their crews returned on foot overland through a wilderness inhabited by hostile Indian tribes; such a life was full of wild adventure. These were the earliest pioneers of Western trade, but under this system commerce could scarcely be said to exist. A few keel-boats and pirogues made ascending voyages under extreme difficulties, but with such transportation there could be but little trade. Almost the only demand for farm produce was caused by immigration from the east. Oats and corn were perhaps ten cents, and wheat thirty to forty cents a bushel. To the flat-boat, pirogue, and keel-boat, propelled by setting poles and oars, succeeded barges with sails. The propulsion of boats by sails was not of course new, but previously it had been thought impossible to use canvas advantageously in navigating the rapid waters of the Mississippi Valley. When this new mode of navigation came into use, Henry M. Shreve came upon the stage of action. He was twenty-nine when he took charge of the little steamer "Enterprise."

In the year 1787, while the Revolutionary Fathers were framing the Federal Constitution at Philadelphia, and John Fitch was offering them free rides in his steamer on the Delaware, Colonel Israel Shreve, who had commanded the Second Regiment of New Jersey Patriots, migrated from his old Quaker homestead, in Burlington County, New Jersey, to "Washington Bottom," in the valley of the Monongahela, and purchased a farm on the first tract of land surveyed west of the Alleghanies, by Washington, in 1748. Henry Miller Shreve was born October 21st, 1785, at the homestead of his parents, in New Jersey, and, therefore, was not two years old when the new home in Pennsylvania was taken possession of. Although the family were Quakers, and bound by their rules to non-resistance, the father and his eldest son, John Shreve—who was a lieutenant under the father—had obeyed the summons to the field at the opening of the

Revolution, and fought gallantly at Brandywine and elsewhere throughout that great contest for liberty. When the family had pitched their tent among the hardy pioneers on the borders, they could, with the rest of the settlers, divide their time between their farms and the Indian wars. At all times they must be prepared to meet the wily savage, with his tomahawk and scalping-knife. In such surroundings the young grew to manhood inured to hardship, quick to discern and repel danger, and skilled in the use of the rifle.

Arrived at his majority, after receiving his education in a school so well calculated to train him for the sterner duties of life in the great region where his lot was cast, young Shreve determined, in 1807, to build at Brownsville, on the Monongahela, a barge of thirty-five tons burden. He manned it with a crew of ten men, for a voyage to St. Louis, where he landed, after a trip of forty days, late in December. He purchased a cargo of furs, and on his return to Pittsburgh forwarded them to Philadelphia. He continued in this trade for three years on his own account, and with considerable profit, numbering himself among those who began thus a commerce between two cities whose transactions with each other now reach several millions annually.

In 1810, after careful consideration, he determined to try his fortunes in a new field, which had been mainly worked by British traders, and on the 2d of May, in a new barge of thirty-five tons, manned by twelve men, and loaded with a finely assorted cargo, Captain Shreve left St. Louis for Fever River. After various detensions to hunt food, etc., he landed where Galena now stands, after a trip of fourteen days. He began his traffic with the Indians, and in six weeks had bought sixty tons of lead. With so great a weight, he was forced to build a flat-boat, and to buy a Mackinaw boat to transport his return cargo. After a voyage of twelve days he arrived at St. Louis, but continued on to New Orleans, and shipped the lead thence to Philadelphia, and from the venture realized a profit of over $11,000. This was the first beginning of the American lead trade on the Upper Mississippi; but so many went into the trade from St. Louis, that the business was soon overdone. Captain Shreve returned to Brownsville, where he built a barge of ninety-five tons, with which he entered upon regular voyages between Pittsburgh and New Orleans, in which he continued for four years.

The difficulties of river navigation at that period can not well be appreciated. Each voyage consumed six months, and was attended with extreme toil, great expense and imminent peril. During a favorable wind, barges would float gently down the stream with the aid of sails and oars, guided with the utmost care and diligence through the forests of snags, among which the vessel in its tortuous course was to thread its way. At other times oars and "setting poles" were the sole resort. The force of the current bore them rapidly forward, but subjected them to the constant danger of strik-

ing a snag, sawyer or sunken root, and going down with their cargoes at a moment's warning. In ascending voyages, the *cordelle* was used at the more dangerous and difficult points, and the barges dragged up stream by main force—many of those boats of over one hundred tons requiring a crew for their management of forty men. This was the *improved* mode of performing those early voyages of 2,000 miles in general use from 1804 to 1814. In less than thirty-five years afterward the inland commerce on the 15,000 miles of rivers of this great central valley had grown to be more than double the whole foreign trade of the Republic. On these great arteries nature had prepared the way for a thriving commerce, but thews of iron and the mighty pulsations of steam were requisite to stem the current of these rushing streams. Cropping out on the very margins of the noble water courses, waiting for the progressive movements soon to be ushered in, lay boundless stores of fuel—black diamonds—ready to shine upon the face of man and bring him untold millions of wealth whenever, by his craft, the sun should track his way to their slightly hidden recesses. Down to the water's edge for thousands of miles were myriads of acres of timber lands awaiting the axe of the woodsman. Frontiersmen had scaled the Alleghanies and beaten back the Indian tribes, in the full expectation that new avenues to wealth would be opened to them. If steam-power had not come to their relief, what now would have been the relative condition of the Mississippi Valley?

Navigation in the quiet bays and on the short rivers of the Atlantic was not the problem to be worked out, for sailing vessels could solve those difficulties with the aid of fair winds and the tides of old ocean; but the problem to be solved was, whether steam vessels could be forced through the main arteries into the very heart of the continent. In due time we shall see what Captain Shreve was enabled to accomplish for the good of his fellows. We have seen how much his experience had done to fit him for the work now before him.

On the 1st of December, 1814, Captain Shreve left Pittsburgh in command of the steamer "Enterprise," French's diminutive little craft, but half the size of the barge he had commanded for four years previously in the like long voyage of 2,000 miles through the great bends of the Ohio and Mississippi. He had on board what he in patriotic pride felt to be precious freight, in a load of ordinance and military stores for General Jackson's army at New Orleans. About two months previously three keel-boats, laden with small arms for the same army, had left Pittsburgh, but under permission to trade by the way—a strange contract which endangered, it is said, the safety of New Orleans, then threatened by the British expedition under General Pakenham. In his voyage, Captain Shreve felt a double anxiety; for the trip was his first in a steam vessel, and the supplies he was carrying were of the first importance to the best interests of his country. Born of good Revolutionary stock, an ardent Republican, and a warm

advocate of the war then waging against England, he felt in common with the people of the West extreme indignation at the burning of Washington City by the enemy. He knew that it was of vast moment that General Jackson should receive his military supplies without delay, and in a fortnight they were safely landed in camp. As anticipated, he found great excitement prevailing on his arrival in New Orleans, and after receiving the thanks of the commanding General, he was ordered to proceed up the Mississippi and tow down the long delayed keel-boats. He was absent six and one-half days, during which time his little steamer had run 654 miles, and then he returned to New Orleans with the small arms and amunition so much needed. From that time to the 3d of January, he was engaged in transporting *materiel* from the city to the final battle-ground of the 8th of that month. On the 3d, he received notice that the commander-in-chief desired him to call at head-quarters, which he immediately did.

On reporting himself to General Jackson he was accosted as follows: "Capt. Shreve, I understand that you are a man who will always do what you undertake. Can you pass the British batteries on the bank of the river nine miles below, and with your steamer bear supplies to Fort St. Philips?" After a moment's reflection, which convinced him of the extreme danger of the enterprise, and suggested a mode of success, he answered: "Yes, if you will give me my own time." "What time do you require," asked the General. "Twenty-four hours," was the reply. It was then agreed that the supplies should be put on board the steamer by 4 o'clock that afternoon, and the effort made to pass the British before the next morning. It will be borne in mind that two battles had been fought prior to the interview just mentioned. The British were encamped several miles below the city, and had erected heavy batteries so as to command the river entirely. It was of great moment that Fort St. Philips should be relieved before the enemy advanced, in order that it might be made the key to subsequent operations whatever the issue of the impending battle.

That evening, the steamer was run down to the *Scud* just above the British batteries. The side most exposed had been completely covered with cotton bales, fastened securely to the vessel with iron hooks. By midnight, as is usual there, a dense fog covered the river, and screened all objects from view. Taking advantage of that circumstance, Capt. Shreve put his steamer in motion, under "a slow head of steam," with muffled wheel; the strictest silence having first been enjoined on the crew. As anticipated by him, he passed wholly unobserved by the sentries on the shore, at a signal from whom his vessel would have been shattered into fragments. Reaching the Fort in safety, he discharged his freight, and on the next night repassed the batteries, undiscovered, until beyond effective reach of the enemy's long guns. Only a few spent balls struck the cotton bales by which his vessel was protected. This daring exploit excited the greatest

admiration in General Jackson's camp, and received his marked commendation.

The day previous to the battle of the 8th of January, Captain Shreve requested permission to join the ranks; and he was accordingly stationed at the sixth gun—a long twenty-four pounder, in Col. Humphrey's battery. There he shared in all the perils and glories of that remarkable victory—ready to aid his country in any manner possible, and at all necessary risks. It was during those eventful scenes that he became familiar with the character of General Jackson; and an intimate friendship sprung up between them, which nothing but death dissolved. He was one of the original seven who made the first demonstration in Louisville in favor of General Jackson's election to the Presidency.

After the battle of New Orleans, the steamer "Enterprise" was sent to the Gulf to exchange prisoners with the British fleet; subsequently with troops up the Red River, and then made nine trips to Natchez. On the 6th of May, 1815, Captain Shreve determined to make an effort to ascend the Mississippi and Ohio to Louisville. Although every previous attempt had signally failed, he was convinced that success was practicable. On the 31st of that month, the "Enterprise" reached Louisville—*the first steam vessel that ever performed that voyage.* Still the delays, difficulties, and expense of the undertaking rendered it doubtful whether steam navigation on the Western rivers would prove of any practical benefit.

The experience acquired by him while in command of that steamer, wrought out improvements of momentous value. He had examined closely the engines of Fulton and French, watched their operations in every particular, studied out their defects, and diligently applied his inventive powers to devise the proper remedies. Convinced that the various inventions he had matured in his own mind would overcome the main obstacles to success, he abandoned the command of the "Enterprise" for the purpose of testing his plans, and commenced the construction of the "Washington." A much larger vessel than the "Enterprise" was the next in point of time, and was constructed for Fulton's heirs at Pittsburgh. This was the "Ætna," of 360 tons (same tonnage as the "Vesuvius," mentioned in the sketch of Fulton). Her length, as stated by her commander, Captain R. De Hart, was "153 feet 3 inches; breadth, 28 feet, and 9 feet depth of hold." She left Pittsburgh in March and arrived at New Orleans in April. "A lack of confidence in steam-power to ascend the Mississippi above Natchez with a cargo, caused her to be employed for the summer in towing ships from the lower river up to New Orleans. Barges then got freight in preference from New Orleans to the falls at eight cents per pound." Captain De Hart says further in his letters of January 28th, 1842, that "in the fall of the year 1815, however, the river then being very low, some of the owners of the "Ætna" and others made another attempt to ascend with a load, and put in her about 200 tons—

very few passengers—freight at four and a half cents per pound for heavy, and six cents for light goods. Above Natchez she had to depend upon drift-wood, and occasionally lying by two or three days, at civilized settlements getting wood cut and hauled; broke a wrought water-wheel shaft, near the mouth of the Ohio, and laid at Henderson nearly fifteen days trying to weld it, and at last had to end the passage to the falls with one wheel in sixty days." At Louisville had two shafts cast. Her trip down, with about 300 tons freight, at about one cent per pound, was made in seven days. Her next trip up was made early in 1816, under many of the same difficulties, in about thirty days, and broke the other wrought shaft by drift-wood in ascending the Ohio.

The "Buffalo," 300 tons, and "James Monroe," 120 tons, were next in order, and were built by a Mr. Latrobe, at Pittsburgh, but seems to have been sacrificed at a sale under the hammer of the sheriff. The latter went into the Natchez trade. Then Captain Shreve's new boat the "Washington," 400 tons burden, made its appearance. She was built at Wheeling, in accordance with his directions, while he superintended, in person, the construction of his new engines at Brownsville. That steamboat was the first "two-decker" on the western waters. In appearance it resembled a dismasted frigate, the cabin being between decks. Previously, the boiler had always been placed in the hold of the vessel; and, under Fulton's patent, upright and stationary cylinders used—under French's the vibrating cylinder. Despite the ridicule with which his suggestions were received, he ordered the cylinder to be placed in a horizontal position, and the vibration to be given to the pitman. Fulton and French used a single low-pressure engine; Captain S. built a double, high-pressure engine, (the first used on the Western rivers,) with cranks at right-angles, and the boilers on the upper deck. Mr. David Prentice had previously employed the *cam* wheel for working the valves to the cylinder; and Captain Shreve added his great invention of the "cam cut-off," by which three-fifths of the fuel was saved. Most of these improvements, originating with him, have long been in universal use, although their origin has not been generally known. The "Washington," when finished, was, in every essential part, unlike any other steam-vessel then known. The machinery weighed only one-twentieth as much as the Fulton engine, and was worked with about one-half the usual amount of fuel. The alterations and improvements by Captain S. made the engine essentially a new machine; and in the course of a few years, no other model was used west of the Alleghanies. If Fulton's inventions entitle him to the great fame awarded by the world, why should not equal merit be accorded to Captain Shreve, whose improvements superseded all others more than fifty years ago?

On the 24th of September, 1816, the "Washington" passed over the Falls of the Ohio, on her first trip to New Orleans, returning to Louisville in November following. The trial was eminently success-

ful. At New Orleans she was visited by the most distinguished citizens of the place, all of whom expressed surprise and admiration at the ingenuity of her commander. Edward Livingston, after a critical examination, remarked to Captain S.: "You deserve well of your country, young man; but we (referring to the Fulton and Livingston monopoly) shall be compelled to beat you (in the courts) if we can." The ascending voyage to Louisville demonstrated satisfactorily the practicability of resisting by steam the currents of the Mississippi. In consequence of the ice in the Ohio River, and continued low water, the "Washington" remained at the falls until March 3d, 1817. On that day she started on the voyage, from which all Western historians date the commencement of steam navigation in the Mississippi Valley. She was heavily laden, both in descending and ascending, and crowded with passengers. From the time of starting to her return to the landing at Shippingport, just below Louisville, including all detentions at New Orleans and elsewhere, only *forty-one days* were consumed; the ascending voyage being made in *twenty-five days*. "This was the trip," said the early historian of Cincinnati, "which convinced the despairing public, that steamboat navigation would succeed on the Western waters." To commemorate the event, and express their gratitude for the triumphant solution of the great problem of the day, the citizens of Louisville gave him a public dinner, and hailed him as the first of benefactors to the Mississippi Valley. In reply to a complimentary sentiment, he predicted that the time was not distant when the ascending trip from New Orleans to Louisville would be made in *ten days*—a prediction received with incredulity, even by those who had then met to celebrate an event, of which they had previously despaired. That prediction was not a random statement, but a conclusion formed from accurate mathematical calculations. That prediction has been more than verified since. *The trip has been made in less than half the time.* On his return to New Orleans, his friends hastened on board, eagerly inquiring what accident had forced him to put back—none of them supposing that he had been to Louisville since they last parted with him. Out of the profits of those two voyages he paid all the expenses of running the steamer, the original cost of the construction, and divided among the stockholders a surplus of seventeen hundred dollars.

Several efforts on the part of Spain, France, and England to command the navigation of the Mississippi River were made, but the General Government and the Western pioneers resisted all such efforts. In 1788, Congress resolved that they had no intention to give up to Spain the navigation of that river—"that the free navigation of the river Mississippi is a clear and essential right of the United States." But a corporation nearly effected in 1815 what had been so resolutely opposed for more than a century. At an early day after his patent had been obtained, Fulton associated himself with Robert R. Livingston, of New York, with the view of monopolizing the trade of the

Western States and Territories. Failing to procure a charter from several Legislatures to which they applied, they finally obtained, in 1811, an act of incorporation from "Orleans Territory," granting to them the exclusive right "to navigate all vessels propelled by fire and steam on the rivers in said Territory." By an abuse of its powers, the territorial Legislature sought to place in the hands of a soulless monopoly the keys to Western commerce—an occlusion of the Mississippi, as fatal to trade as that attempted by the French Government in 1802. That corporation laid its relentless grasp on the Father of Waters, resolved not to relax its hold, but to extort tribute, for all coming time, from the people of half the continent. It dared not rely on Fulton's patent, for the invention of Fitch claimed precedence, and French's ingenuity had secured a patent equally valuable; hence it sought, by corporate privileges, to make trade subservient to the aggrandizement of the few, instead of leaving it open to honorable competition. Among those who felt indignant at the outrage, Captain Shreve stood foremost. He determined to resist such exactions in every way known to the laws. Anticipating that a protracted legal controversy would commence as soon as the steamer "Enterprise" arrived at New Orleans, he had consulted while there with his barge, in the spring of 1814, A. L. Duncan, Esq., one of the most prominent members of the bar, and gave him five hundred dollars as a retaining fee, together with a bond for fifteen hundred more, to be paid on the successful termination of the impending suit. That foresight was fortunate; for, on learning that the "Enterprise" was on her way down the river, the company retained in its service the whole New Orleans bar, and offered to Mr. Duncan three thousand dollars if he would remain silent. But he frankly replied that he was Captain Shreve's counsel, and had advised him to oppose the pretensions or demands of the corporation. On the first arrival of that steamboat, however, New Orleans was under martial law, and she was not seized until May 6th, 1815, the day fixed for her departure for Pittsburgh; but his counsel, anticipating the step, had the necessary bail ready. The "Enterprise" was accordingly released, and pursued her voyage. In a few months the trial took place in the inferior court, and the jury promptly returned a verdict in favor of "free navigation." The cause was removed by writ of error to the Supreme Court of the Territory; and the act of incorporation was there pronounced unconstitutional, in the year 1816. But that colossal monopoly resolved not to relinquish its privileges on the first defeat. Hence, when the "Washington" reached New Orleans, in the fall of 1816, she was also seized, and Captain Shreve arrested. By advice of his counsel, he refused to give bail, and the officer expostulated with him strongly, offering to receive his bond without sureties, rather than take him to prison. While they were conversing, however, the rumor had spread along the levee, and an immense crowd collected, determined to oppose the arrest. At the request of Cap-

tain Shreve, no outbreak occurred, and he agreed to go to the office of Mr. Edward Livingston, who, with John R. Grymes, was the principal counsel for the company. The crowd followed; but on reaching Mr. Livingston's office, Captain Shreve was prudently released. The steamer, when seized, was instantly abandoned to the Marshal; and Mr. Duncan applied to the Court for an order on the company to give bail for damages, caused by her detention. Messrs. Livingston and Grymes resisted the motion, but it was granted. They then became seriously alarmed for their monopoly. Public sentiment cheered on their opponent, eminent jurists sustained his cause, and he could not be intimidated into a compromise. Messrs. Livingston and Grymes offered him in behalf of their clients, *one-half of all the advantages of their monopoly*, if he would instruct his counsel to so shape the defense as to cause a verdict to be rendered against him. The temptation was powerful, but he had commenced the controversy for other objects than private gain. He felt the force of his position—that on him hung the right of free navigation—that his companions on the waters of the West looked to him as their leader and representative in the struggle; and he was equal to the occasion. He had dared to risk his fortune in a contest, single-handed, against the most powerful monopoly of the times, and the same spirit which prompted him to resist at first, impelled him to spurn the bribe and lose this chance for great wealth. The issue was one of vast moment to the millions who received the benefits of the free navigation of the Mississippi and its branches.

At this period, 1817, there had been built on the Ohio about fifteen boats, several of them under one hundred tons capacity; besides those mentioned already there had appeared the "Franklin," 125 tons, and the "Oliver Evans," seventy-five tons, both built in Pittsburgh, with engines made by George Evans under Oliver Evans's engine patent. Then came the "Harriet," forty tons, from Pittsburgh, the "Kentucky," eighty tons, from Frankfort, and the "General Shelby," ninety tons, constructed at Louisville, but having a Boulton and Watts engine. Following these appeared, in 1817, the "New Orleans," 300 tons, built by the Fulton and Livingston interest at Pittsburgh for the Natchez trade; she was sunk once at Baton Rouge, and two months after being raised was lost by sinking at New Orleans. After this date we hear nothing further of Fulton's boats on the Western rivers.

After the memorable success of Captain Shreve with the "Washington," all fears respecting the navigation of Western waters by steamboats seem to have vanished. Boat-yards were established at convenient points and steamboat building was active. It is difficult, at this late day, to appreciate the enthusiasm excited among "the people of the West" over the achievements of the "Washington" and her gallant captain. Dr. McMurtrie, in his sketches of Louisville, published in 1819, remarks: "Next to Fulton the Western country owes a vast debt of gratitude to Captain Henry M. Shreve. It is to

his exertions, his example, and, let me add, to his integrity and patriotic purity of principle, that it is indebted for the present flourishing state of its navigation. The offer of the Livingston Company was rejected with scorn and indignation, and the affair left to justice, whose sword instantly severed the links that enchained commerce on the Western rivers." Had Shreve been weak and grasping, how different the result! How long would the great monopoly have held control of steamboats, and the prices of transportation for freight and passengers? Fulton had really almost no legitimate claim to originality in connection with the steamboat; he had, however, secured the co-operation of large capitalists, who, after quarreling with each other over the steam apparatus of Watt, John Fitch, John Stevens, and Robert R. Livingston, had finally concluded to join forces and take the country, at least the fluid portions of it, and put it in charge of their monster leviathan; but justice, under an overruling Providence, brought their counsels to naught, and gave to the wings of commerce *on water, the power of steam free of all constraint,* as came to be as palpably the fact *on land* a few years later, when the locomotive sprang upon the iron track, ready to move in all its ponderous power and winged fleetness, without paying tribute to patent laws, or being in the least restrained from fulfilling its destiny as rapidly as the laws of nature would permit. The "Washington" was not built under French's patent, as was the "Enterprise," but was built after the plans of Captain Shreve, in which were embodied numerous inventions of his own; the originality of these was universally conceded. He neither invoked the aid of the patent law to secure his rights, nor suffered loss by infringing upon the claims of others under the patents they had received. The experience of four years had demonstrated that neither Fulton's patent, or that of French, could ever be made of special benefit to Western commerce.

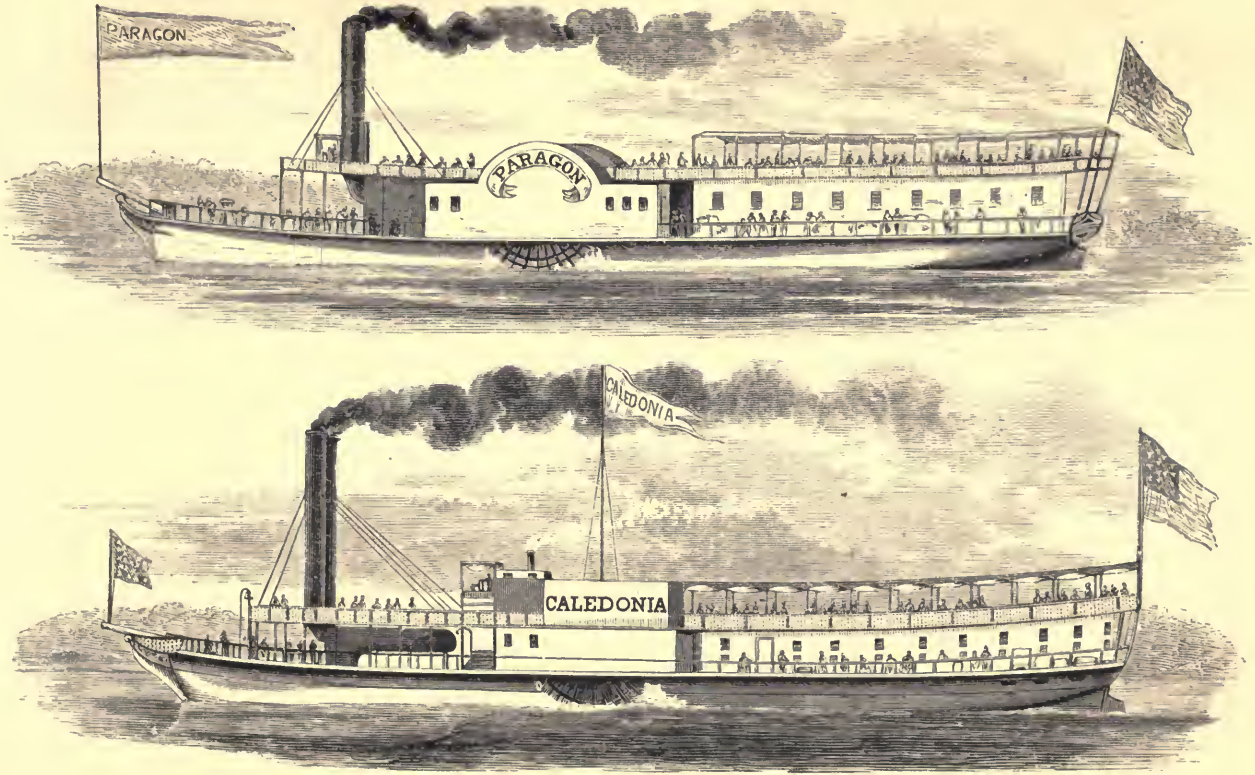
Captain Shreve's new boat, the "Ohio," 443 tons, was built at New Albany in 1818; also the "Volcano," 250 tons, and at Shippingport, opposite, the "Napoleon," 332 tons; while there were built at Cincinnati the same season several other boats for Captain Bakewell, small ones, ranging from 70 to 120 tons. The "Vesta," 100 tons, was constructed at Cincinnati in 1817.

Three of the first boats started from Cincinnati in 1817–18 had been large New Orleans *barges* and were altered into small steamers. The first keel for a steamboat was laid by Thomas W. Bakewell, early in 1817. In that year he had built for him in Cincinnati by Captain Zach Neilson and his partner, Richardson, the "Eagle," 120 tons, and the "Henderson;" and the "Hecla," by Ayres & Son, all of the same measurement. From that time to 1830 Captain Bakewell built an average of three boats each year, "principally on contract for the South." His early boats had low-pressure engines, because in the absence of experience he preferred following Watt and Boulton. This venerable gentleman is still (1872) in good health, and resides

with his son in Pittsburgh. He has recently interested himself in scientific calculations respecting the strength of steam boilers, and believes that he has demonstrated that boilers, calculated on the basis now usually adopted, will bear but sixty-two and two-thirds of a pound of pressure to the square inch, where the prevailing theory assumes that the pressure may safely be 100 pounds. If correct in his calculations the great cause for explosions occurring so frequently may be readily explained.

In building the "Ohio" Captain Shreve made important changes, by introducing the use of double flues and "supplying the boilers through the aft stands," thus saving fuel and preventing the "stands" from being burnt out every few months. This vessel was running for about three years when Captain Shreve built the "George Washington." The "Calhoun," eighty tons, built at Pittsburgh, was sent off on an exploring expedition up the Yellowstone in 1819. The "Independence" was said to have been the first steamboat that undertook the ascent of the Missouri. She was of fifty tons burden, and accompanied the "Expedition," 120 tons, both reaching Boone's Lick, 200 miles up the Missouri, in June, 1819. Great rejoicings were caused at that period when it was believed "beyond a doubt that this important and extensive river, for several hundred miles at least, can be navigated by steamboats with the same ease and facility as the waters of the Ohio and Mississippi."

The "General Pike" was the first boat built in the West for the special accommodation of passengers; she was constructed, in 1818, at Cincinnati for a company of her citizens. According to the City Directory of 1820, "she measures 100 feet keel, 25 feet beam, and draws only 3 feet and 3 inches water"—(in marked contrast to the Fulton boat, "Ætna," of three years previous, with 9 feet hold)—"the length of her cabin is 40 feet and the breadth 25 feet. At one end are six and at the other eight state-rooms, divided in the middle by a passage, leaving in the center a commodious hall, 40 by 18, sufficiently large for the accommodation of about one hundred passengers. Her accommodations are ample, her apartments spacious and superb, her machinery and apparatus perfectly safe and in fine order, and her commander, Captain Bliss, always attentive and obliging." Such were the views of Farnsworth in 1820. As a matter of interest, we furnish a cut of this first *Louisville, Cincinnati, and Maysville Packet*, from a drawing made under the supervision of two of the old and highly respected citizens of Cincinnati—one a steamboat captain of 1821, a half century and more ago. The engraving will indicate the vessel to the eye far better than can be done by words. One of our friends also kindly furnished an accurate drawing of the steamer "Paragon," 376 tons. She was built at Cincinnati, by Wm. Parsons, and owned by Wm. Noble and Robert Nelson; and was launched on the 18th of January, 1819. Her length on deck was 156 feet—27 feet beam and 9 feet hold. She had a low pressure engine and was



Ohio and Mississippi Steamers, 1819 and 1823. (See pages 78 and 79:)

spoken of as having "spacious and convenient apartments for the accommodation of ladies and gentlemen," and as a "first-rate running boat." We feel especial pleasure in being able to present an accurate picture of this boat as well as one of the "General Pike." These were not obtained without considerable effort in finding the proper source for information.

During 1819 there was built in New Orleans, for the Louisville trade, a large boat, of 460 tons, called the "Columbus." In the same year the "Vulcan," 300 tons, was built at Cincinnati for Hugh and James Glenn and others; also, the "Tennessee," 400 tons, built for Breedlove and Bradford, of New Orleans.

Steamboat building seems to have received a great impetus during that year. This was probably brought about by the withdrawal of the special claims of Livingston and Fulton under the statutes enacted in their favor. Congress likewise gave the Postmaster-General authority to have the mails conveyed by packets from Louisville to New Orleans, provided the expense should not exceed the cost of transportation by land. The "Post Boy," built at New Albany, for Captain Shreve and others, was put into this line the same year. By this time, Captain Shreve had matured further improvements which his observations had suggested.

When 1820 had come, seventy and more steamers had been launched on the Western rivers, which had taken the place of barges and keel-boats. Wood-yards were established at many convenient points, so that fuel could be had for passing boats, and in places where had been Indian camps, thriving villages had sprung up, and become the centers of a growing trade with the interior settlements.

Among the illustrations of this volume, given to exhibit the progressive changes in steamboat architecture as well as to preserve their forms for future reference, we give an authentic drawing of the "Caledonia," which was launched at Cincinnati on the 31st of December, 1823. She was 150 feet keel, 27½ feet beam, and 9 feet hold; and her measurement was 340 tons. She was built for Captain Wm. Noble, and under his supervision. Her low-pressure engine was taken out four years later and a high-pressure one substituted. The "Caledonia" ran between Louisville and New Orleans until the summer of 1832; she was then altered into a tow-boat and used between New Orleans and the Balize. Captain Noble was an esteemed citizen of Cincinnati, and in the early days of steam-boating in the Western rivers was prominent as a steamboat owner and commander, and took the lead in all improvements. Before the days of steamboats he built and owned the largest barge then afloat; and was an early and effective advocate of a canal round the falls of the Ohio. He was a native of Lancaster County, Penn., and died May 23d, 1827, aged forty-six years. To testify their high estimate of his character and commemorate his virtues the citizens of Cincinnati erected a monument over his grave.

Captain Thomas W. Bakewell, in a letter to Geo. T. Williamson, Esq., President of the Pioneer Association of Cincinnati, dated February 20th, 1857, furnished a complete list of 150 steamboats mainly built, and all running on the Western waters *before* 1825. Of these we note that 38 were built at Pittsburgh, 37 at Cincinnati, 15 at Louisville, 5 at New Orleans, and 6 at New York; several were built at New Albany and Jeffersonville; others at Steubenville, Wheeling, Marietta, Maysville, Frankfort, and points where nothing of this kind has been done for many years.

In 1824 Captain Shreve finished his new steamer "George Washington," which was constructed on the model now in common use—the first built with the cabin on the upper, or what had been known as the hurricane deck. The previous boat built by him was the "United States," which had been a year or two in service, and like the other steamers built before the "George Washington," had too much the form of a sea or lake vessel, making the draught too great for the frequent shallow water of navigation on Western rivers, and was not adapted to accommodate the increasing crowds of passengers.

Some of the partners of Shreve objected to the plan of his new venture, saying that the boat would be too "top-heavy," and consequently they refused their consent to the experiment, until he demonstrated by mathematical calculations that the weight of the upper deck and cabin, when filled with passengers, would be less than that of the deck-loads carried in the common "two-deckers," previously in use. Some years before he had introduced the double engine, which was usually connected with a stern-wheel, because a boat could more easily be managed than when having side-wheels moved by a single crank. The numerous sharp bends and dangerous snags in the rivers required that boats should be thoroughly under the control of the pilot, and to secure this, more than the *rudder* was necessary. To effect his purpose more completely, Captain Shreve constructed the "George Washington" with side-wheels, each to be worked by a separate engine. Thus the pilot and engineer could make sudden turns and manage the largest steamers as easily as a skiff with oars. When this new feature was suggested it met with general ridicule, and his associates very reluctantly consented to its being tested. The predictions of Captain Shreve were soon verified, and the "George Washington" became the model for all Western steamboats. His daily experience, aided by his habits of close practical observation in all matters pertaining to steam navigation, guided by sound judgment and great sagacity, enabled him, through a long course of years, to be of far more essential service to his country than Fulton ever was. His originality in steamboat improvements is far more manifest at this late day, and his innovations were manifestly the result of his own reflections, since we know that he was unaided by the counsel of scientific friends.

Voyages on the Mississippi and its tributaries were greatly hindered

and protracted, and serious disasters were constantly occurring because of the innumerable snags, etc., which filled the beds of these waters, whose channels furnished the intercommunication for an area not less than 15,000 miles in extent. The removal of every obstruction from these great highways of commerce, that no hinderances might interrupt its movements, or endanger military operations when required for the safety of the nation, was of the first importance.

For untold centuries the fierce current of the Mississippi had been uprooting from its alluvial banks and bottom lands trees of giant growth, and sweeping them onward, until striking upon a bar, or caught in a bend of the river, they were stayed in their course and formed a leafless forest for over twelve hundred miles. The strong and pointed branches of these trees, peering above the surface of the water, often threatened sudden destruction to the vessel of the most skillful navigator in the almost trackless windings of the Father of Waters.

From the archives of the War Department, it may be seen that on the 5th of July, 1824, Captain Shreve wrote an interesting reply to a circular, issued in May preceding, by Major-General Macomb, in which many important suggestions were made to the Government. In that letter he affirmed that "the river may be entirely freed from such obstructions," naming several modes by which it could be done. He offered to submit for inspection, if desired, the model of a machine invented by him in 1821 for that purpose, but the request was not made. The Department chose to offer a premium of a thousand dollars for the best plan for removing snags, sawyers, etc.; for which Captain Shreve declined to compete. The premium was awarded to Mr. Bruce, of Kentucky; but before his machine was completed it was considered a failure, and he abandoned it, concluding that it could not be used successfully. He, however, began to fulfill his contract with the Government for removing snags, under the supervision of Major Babcock, of the Military Engineers, using ordinary flatboats, levers, chains, and saws, worked by manual labor. After nearly two years had elapsed, only a portion of the obstructions in the channel of the Ohio had been removed, without mastering a single snag in the Mississippi. The people began to complain loudly, for the $65,000 appropriated was nearly exhausted. A new supervisor died shortly after his appointment, and there was a hitch in regard to the whole matter. Finally, through Mr. Calhoun, the former suggestions of Captain Shreve were again brought to the notice of the Department, and it was decided that he should be appointed superintendent. On the 10th of December, 1826, his commission was forwarded to him, and he accepted it January 2d, 1827.

Pursuant to instructions he examined the whole subject and reported that it was impossible for Mr. Bruce to comply with his contract; that the apparatus used was unsuitable, and that a new plan must be adopted. He received orders to commence operations on the most

economical plan at Government expense, and by the use of such means as the small balance of the appropriation would warrant. During that season he "used a twin-boat," with wheel and windlass, worked by manual labor. The additional experience thus gained convinced him more fully that a mightier power than human strength applied to simple machines was requisite. He urged the building of a steam-vessel on the model which he had invented, but the scheme was ridiculed and derided by Western boatmen, and opposed by the red-tape officials at Washington. He assured the authorities of the entire feasibility of his project, and after being met by incredulity on all sides, determined to test his invention on a small scale at his own expense, and thus came to *know* that he was urging no absurd experiment. There were Western boatmen, who, having witnessed his success, and being of General Jackson's opinion, that "he was a man who would do whatever he undertook," petitioned to have his request granted. The Department consented finally, June 27th, 1828, and the first snag-boat was built, and, under the name of the "Heliopolis," was ready for operations July 22d, 1829.

This machine-boat had twin hulls about eleven feet apart, firmly connected "abaft midships," and so constructed that a blow from the snag-beam bore equally on every part and timber of the vessel. The snag-beam connected the twin hulls at their bows, was wedge-shaped, and placed at the water line, in the exact center of percussion, so that a blow from it produced no jar whatever, and consequently did not disturb in the least any of the machinery connected with the boilers or engines. Besides that simple contrivance there was an ingenious combination of the pulley, windlass, wheel and axle, lever, etc., for lifting the numerous impediments to navigation. The boat when at work in removing these obstacles moved under a full head of steam, and struck the snag a sudden blow with the full momentum of the moving mass, perhaps equaling the force of a pressure of three or four thousand tons. If firmly imbedded, the snag was instantly broken at the point of leverage, generally a distance below the bed of the river, equal to the diameter of the snag. But if too loose to offer so great a resistance, the boat in its progress turned it over, and at the same time trimmed off all the limbs on the under side. On its return passage the snag was trimmed on the other side, and a chain was forced beneath it. In perhaps five minutes it was lodged upon the deck, and soon sawed into small pieces. All the machinery as well as the boat of this admirably ingenious and effective worker was driven by the same steam-engines.

On the 19th of August, 1829, the "Heliopolis" entered the Mississippi, and began its operations at Plum Point, where the snags formed an almost impassable barrier. All were in doubt excepting the inventor, but when she had in a few hours shown her capacity to wrestle with that immensely tangled thicket of river forest, and remove it, with the greatest facility and ease, all were *convinced*, and

the *triumph* was complete. So thoroughly had Captain Shreve's genius met every difficulty, so entirely perfect was the machine in all its parts, that to this day no improvement or alteration has been made in it. It saved to the nation millions upon millions of dollars, and preserved life to an extent that can not be estimated. This simple but admirably effective invention is still constantly in use upon obstructions which are ever renewing. The Government engineers, after minute surveys, reported the removal of the great Red River raft nearly or quite impracticable, and Captain Shreve was consulted. His response was satisfactory, and he was ordered to undertake the Herculean task. From the official report to Congress the following extract is given :

"The great raft of the Red River, consisting of trees, logs, and drift-wood of every description, firmly imbedded in its channel for *more than one hundred and sixty miles, was removed*, and the navigation of that river opened, including the raft, a distance of nearly twelve hundred miles. This work alone, in consequence of the immense quantity of public land reclaimed in that region and rendered fit for cultivation, the enhanced value of other lands on the upper part of the river, and the reduced cost in the transportation of supplies to Fort Towson and to the Indians located in that neighborhood has been worth millions to the Government. . . . Eighty-five thousand dollars was the saving in one season on freight alone."

The cost of removing those obstructions was but about $300,000, instead of $3,000,000, as had been prophesied. Such snag-boats have to be constantly removing new obstacles in all the Western rivers.

Upon the advent of John Tyler to the Presidency, after the decease of General Harrison, Captain Shreve was officially informed of his removal from office, by a letter dated at Washington, September 11th, 1841. After thirty-four years literally spent on the waters, he returned to the quiet pursuits of an agricultural life, in which he was engaged when a youth. His farm was near St. Louis, and with the same zeal and liberality which he had always manifested, he devoted himself energetically to improving his landed estate.

A list of 369 steamboats on the waters of the Mississippi and Ohio, and their branches, was printed October 11th, 1841, in the *Louisville Advertiser*, but Captain R. DeHart, then a veteran steamboat officer, made a corrected list, showing a largely increased number, and insisted that there were then between four and five hundred steamboats on the Western rivers, measuring from 75 to 600 tons, all carrying, ordinarily, over their tonnage. They were valued at from eight to forty thousand dollars each, and made a speed up-stream of seven to fifteen miles an hour, and descended at from ten to eighteen miles: making trips from New Orleans to the falls in five to eight days, and down in four to five days. These facts from so competent a witness sufficiently establish the prophesy of twenty-five years earlier, made

by Captain Shreve, when he claimed that the trip from New Orleans would ultimately be accomplished within ten days.

A British engineer, Mr. David Stevenson, who visited this country in 1837, published a work after his return, from which we now give some pertinent extracts. "The steam navigation of the United States is one of the most interesting subjects connected with the history of North America, and there is no class of works in that comparatively new and rising country which bear stronger marks of long-continued exertion, successfully directed to the perfection of its object, than are presented by many of the steamboats which now navigate its rivers, bays, and lakes. In this country (Britain) most of the steamboats go out to sea, where they encounter as bad weather and as heavy waves as ordinary sailing vessels, but by far the greater number of American steamboats ply on the smooth surface of rivers, sheltered bays, or arms of the sea, exposed neither to waves, or wind. The consequence is that in America a much more slender construction and more delicate mold give the requisite strength, and secure a much greater speed. In America the machinery and the cabins are raised above the deck of the vessels, admitting of powerful engines, with an enormous length of stroke. These arrangements would be wholly inapplicable to vessels navigating our coasts, at least to the same extent.

"The early introduction of steam navigation and the very rapid increase in the number of steamboats in the United States has opened an extensive field for the prosecution of important inquiries. Steamboat builders have been enabled to make constant accessions to their practical knowledge, which have gradually wrought great improvements in the construction and action of their vessels—each builder holding his own opinions, founded generally not on theoretical principles, but on deductions drawn from a close examination of practical effects. Twelve years ago (1825) thirty hours were occupied in making passages between New York and Albany—150 miles. Now the voyage is made generally in ten hours, exclusive of time used in making stoppages, being at the astonishing rate of fifteen miles an hour. This great increase of speed has been effected by constant experiments on the form and proportions of engines and vessels—a persevering system of *trial and error*, which is still going forward.

"These observations apply to the Eastern waters of the United States more especially, where competition has led to the construction of a class of vessels unequaled in speed elsewhere. The construction of many of these boats has been changed materially from their original form. It is no uncommon thing to alter steamboats, by cutting them through the middle, and either increasing or diminishing their dimensions as the occasion may require. The Hudson River Steamer 'Swallow,' holds the reputation of being one of the swiftest steamers which have ever navigated American waters, and this vessel has received an addition of twenty-four feet to her original length, besides

having been otherwise considerably changed. Before these alterations were made, she was considered, as regards speed, an inferior vessel.

"Local circumstances have given rise to three distinct classes of vessels in American steam navigation. The Eastern boats are distinguished for their long sharp build, great speed, and the use of condensing engines of large dimensions having a great length of stroke. On the Western waters the vessels have a lighter draught of water, less speed, and are propelled by high-pressure engines of small size, working by steam of great elasticity. The steamers on the lakes, again, have a very strong build and a large draught of water, and possess in a very great degree the character of sea-boats. They have also masts and sails which the others do not have." These are the views of an intelligent observer, whose opinions are valuable, because they were given after careful inspection, and at the period just prior to the great railroad movement which has since more especially attracted the attention of both foreign and native travelers.

The contentions of rival interests in steamboat lines on the Hudson and on Long Island Sound for years before and after Mr. Stevenson's visit, had much to do with quickening the speed of boats, then making such rapid strides towards the twenty miles an hour, which was about the utmost limit, we think, reached and maintained with approaches to regularity, on the waters of which New York was the focal attraction.

John Stevens, of Hoboken, N. J., was one of the early experimenters in steamboat machinery of the period when Livingston was following up the endeavors of Fitch. Stevens was a man of large wealth, with a fondness for scientific experiments, but without practical skill in mechanics. He employed practical machinists in furtherance of his projects, and so soon as 1791 began experiments, which resulted in his obtaining patents from the Government soon after the patent law was enacted. He built a workshop on his own estate that he might have his workmen constantly under his supervision. In this way his son, Robert L. Stevens, became a practical engineer and steamboat builder. When the privilege of navigating the waters of New York by steam in which the elder Stevens was finally interested with Livingston and Fulton, was rendered valueless, by the decision of the United States Supreme Court, holding the New York law to be unconstitutional, the younger Stevens was ready to bend all his energies to a competition with Vanderbilt as a manipulator of Gibbons' wealth (quite a portion of which had been left with special reference to being used to break down monopolies), or with any other man or company of men who were fond of excitement and at the same time had an eye to business and favor with the public, in furnishing fine steamboat accommodations for those traveling on business, or for pleasure. As may readily be seen the incentives to a vigorous strife for fine appointments to secure high speed, attract passengers, and enable them to enjoy a high degree of comfort, were not wanting.

Robert Buchanan, Esq., now (1872), at the age of seventy-six, an active citizen of Cincinnati, in which city he has resided for half a century, and during the entire period has been one of her eminent merchants, in a communication to the Pioneer Association of that city, under date of January 29th, 1857, remarks:

"In 1821 I took command of the steamboat 'Maysville,' 309 tons, and remained on her for two years. In the spring of 1822 I took her up to Pittsburgh, and was saluted by the firing of cannon from the shore. Upon inquiring the cause I was informed that it was in honor of the largest steamboat, in the New Orleans trade, that had ever come up the river to that city.

"Early in the spring of 1811 I left my native home, on the banks of French Creek, in a small canoe. On reaching the Alleghany River I went on board of an open keel-boat, and was taken to Pittsburgh. This was my first experience in navigation. When traveling now on the splendid floating palaces that adorn our rivers, and looking back to my first voyage on the Western waters, the change seems like magic—almost realizing some of the stories of Eastern fable. But in this Western world our 'Aladdin's lamp' is the midnight lamp of the student, and our 'Genii' the *Inventor.*

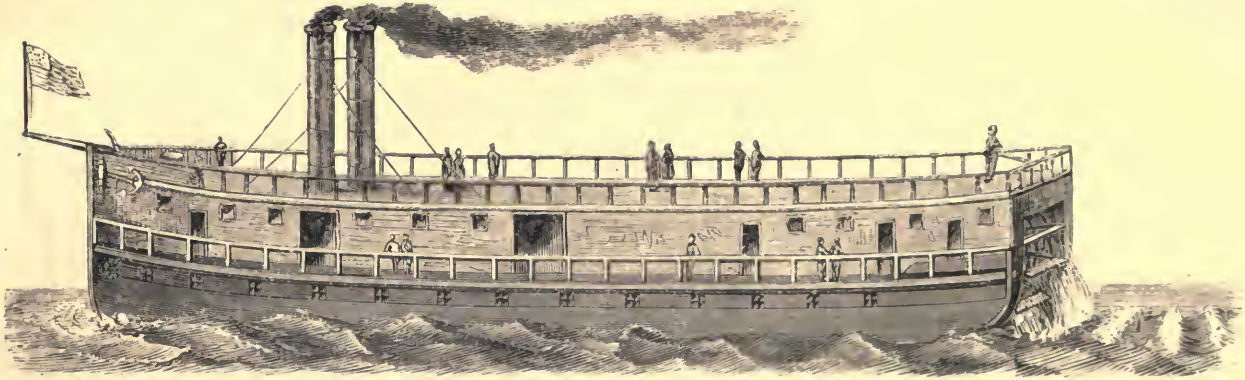
"Let me call your attention for a moment to the present state of steam navigation in the West. On our large rivers and tributaries about nine thousand miles can be navigated by steamboats.

"The number of boats engaged in this trade is near 800, with a capacity of perhaps 200,000 tons, and employing some 20,000 men.

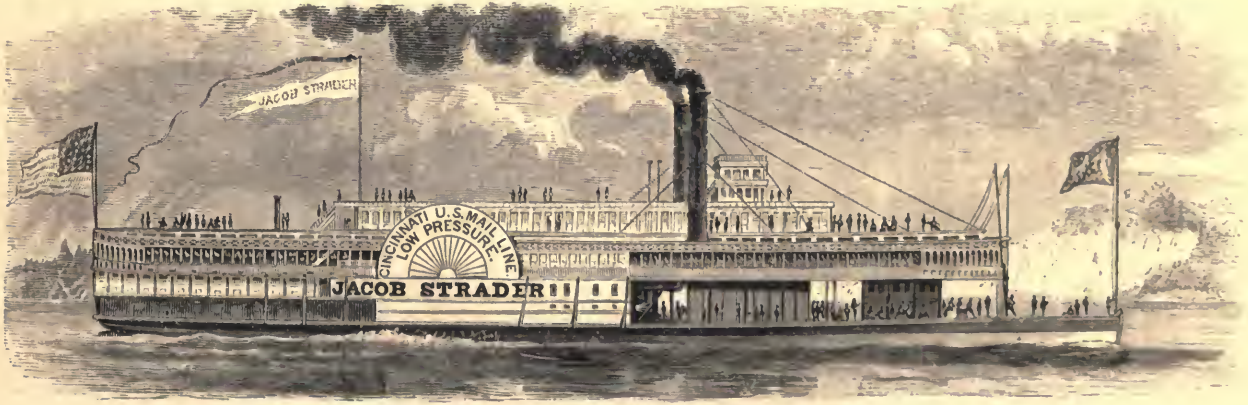
"To transport the *up freight* alone carried by these boats, it is estimated that it would require 8,000 keel-boats and barges, and 200,000 men, averaging the steamboats at six trips, and the others at three trips annually. This is for the up cargo only, saying nothing about the down cargo or passengers. Thus may be seen at a glance the immense benefits of steam navigation to the vast country lying between the range of the Alleghany and the Rocky Mountains, once denominated the West, but now, since the acquisition of California, the West no longer, but the great *central* portion of our Union."

As before stated, Captain Shreve, on leaving the river, retired to his estate near St. Louis and interested himself in agricultural pursuits. There, as elsewhere, he was thoroughly practical, but he found pleasant recreation and profitable amusement in "experimental farming."

His first wife having deceased, he married a second time, in 1846, a daughter of John W. Rogers, of Boston, Massachusetts. By this marriage he had two daughters—one of them died, and the other is Mrs. Emlen Hutchinson, of Philadelphia. The first Mrs. Shreve was the daughter of Adam Blair, of Brownsville, Penn. Captain Shreve married Miss Blair in 1811; she bore him two daughters and one son; the latter died in infancy. The eldest daughter married John W. Reel, of St. Louis, but is not now living. The surviving



The General Pike, 1818. (See Page 78.)



Louisville and Cincinnati Mail Line, 1856.

daughter of his first wife married Captain Walker R. Carter, long a well-known resident of St. Louis.

In mature life Captain Shreve was a man of fine personal appearance. Standing five feet eleven inches in height, and weighing over two hundred pounds, his presence was commanding. Although so large when he had arrived at middle life, he was at the age of twenty-five years so slight in form as to be taken for a lad of seventeen. Slight in frame, he was as a youth very muscular, remarkably spry, and possessed of immense strength. He took great pleasure in athletic sports, and excelled in all of them. When on his trading expeditions he had frequent races with the Indians, whom he always distanced, and consequently astonished. His courage was no less remarkable; he seemed never to know what fear was, either in the presence of a savage, or, if occasion required, in an encounter with wild beasts.

At the opening of the Telegraph at St. Louis, Captain Shreve sent the first message borne by electricity, from the banks of the Mississippi to the tide waters of the Atlantic. It was to the President of the United States, at Washington. Thus did he fill out the measure of a career of great usefulness and brilliant endeavor. Quietly at his home, for the last ten years of his life, he enjoyed the pleasures of a serene old age, and died after a protracted illness in his 66th year, March 6th, 1851. His widow is still living.

SUPPLEMENTARY.

For the information of our readers, we here propose to give a few facts which may prove interesting. It is well known that a very large portion of American commerce with foreign countries has been carried on since the war of 1861–5 in foreign vessels. Previous to the advent of the Alabama and other Confederate cruisers, American vessels were to be found in every sea. Great Britain profited enormously by the events which gave her shippers a practical monopoly of the carrying trade on the Atlantic. When the war broke out in 1861 the tonnage of British vessels was 5,895,369 tons, and of American vessels, 5,539,813 tons. In 1821 American tonnage was but half that of Great Britain; during the intervening forty years we almost got upon a par with her in the carrying trade of the world; but by 1871 the tonnage of American vessels had fallen to 3,946,150 tons, while Great Britain had increased her tonnage to 7,142,891 tons, showing that relatively the United States had fallen back to where she was a half century previous.

This seems decidedly hard, but these figures do not tell all the truth, for a large amount of the tonnage deducted from the American total of 1861 was transferred to foreign registers, but nominally only to foreign ownership. The old emigrant packets were displaced by iron steamers, and the tonnage formerly in the coasting trade has not been needed again, because of the increased railroad facilities by which freights now pass overland. During the years when our ships were forced into the hands of foreign owners, and Americans ceased to build the clipper ships, which for two or three decades had been so famous, a marked revolution was going forward in marine architecture. Wood gave place to iron, and for the construction of iron ships Britain possessed for the time superior advantages.

There are, however, many indications going to show that the recent rapid development of our iron industries, coupled with influences now at work in Britain, especially in the increased prices of coal and of wages, will bring about such changes as will tend to establish on our own shores the business of iron ship-building. We have the coal and the ore with which to increase to an indefinite extent our production of iron, while Britain must import her ores, and now can not mine coal enough to supply her consumptive demand. Another year will see an enormous increase in the production of American iron, and with a more abundant supply prices must decline. It would seem that we have been and are building iron steamships better and cheaper for Americans, all things considered, than those built in Great Britain. "Among the vessels already built, and now building in American waters, are many which are better than the best ever constructed in British ship-yards, and none have been launched in this country which are not better in material and construction than the average of Clyde-built bottoms." "These are facts," says the *Iron Age*, "and in them we see the promise of a future for iron ship-building in the United States, and for our maritime interests, which shall leave us no reason to envy the achievements of Great Britain."

The American Steamship Company of Philadelphia—an offshoot of the Pennsylvania Central Railroad Company—are now (1872) having built for them at the extensive ship yards of Messrs. Cramp & Sons, Philadelphia, four large iron steamers. During the war that firm finished several monitors and gun-boats for the United States navy, among which was the *New Ironsides*, which did good service at Charleston. After proving itself one of the most successful of the ironclads, she was unfortunately lost by fire. This firm turned out a few months since the iron screw steamship George W. Clyde. She was built for the coasting trade, and on her trial trip made ten knots an hour, and is said to be of very symmetrical and graceful form. She is 220 feet long, of 1,200 tons burden, and can carry 2,200 bales of cotton.

Each of the four vessels building for the Pennsylvania road, is to be 355 feet long, 43 feet beam, and 57 feet deep, and of 3,016 tons burden. They are to be equipped with compound engines made in

this country, but modeled after the English. They will thus rank in size and power along with the largest of the many foreign steamships plying between Europe and the United States, and as they will traverse the same route, there will be opportunities for accurate comparison of speed, economy, and efficiency.

It is interesting to examine the reports of steamship traffic between New York and European ports. There are now considerably over a hundred vessels, belonging to different lines, plowing the waters of the Atlantic. Last year the exact number of steamers was one hundred and five. The distribution was as follows: Cunard line, 20 steamers, with an aggregate measurement of 53,412 tons; Anchor line, 18 steamers, of 30,679 tons; Inman line, 16 steamers, of 36,643 tons; Bremen line, 13 steamers, of 35,999 tons; National line, 12 steamers, of 45,982 tons; Hamburg line, 9 steamers, of 27,187 tons; Williams & Guion line, 8 steamers, of 12,192 tons; French line, 4 steamers, of 12,192 tons; White Star line, 3 steamers, of 11,211 tons; and the Baltic Lloyd's, 2 steamers, of 3,600 tons. Of these ten lines of steamers, seven during 1871 transported 311,176 passengers. In addition to the above lines running from New York, there are now three lines of steamers between Montreal and Great Britain. The Allan line dispatches a steamer every week, and an extra steamer once every two weeks; the Beaver line, owning five ships, dispatches a steamer once every week; and the Dominion line, owning three ships, dispatches a steamer every fortnight. There are weekly lines of Atlantic steamers running from Boston and from Baltimore.

RICHARD TREVITHICK.

BEFORE giving a brief sketch of this talented Englishman, and his connection with the locomotive engine, we present a few facts respecting the steam carriage of Oliver Evans, who was an acquaintance of John Fitch, and resided in Philadelphia when Fitch visited there on his last trip to Kentucky. As we have already seen, the application of steam-power to carriages on common roads was entertained by Fitch, for a short time, in his earlier experiments.

Oliver Evans was a native of Newport, Delaware, and was engaged with his project for driving steam carriages on common roads not long after John Fitch was working on his steam-boat projects; but he was poor, and, like Fitch, was unable to command the means requisite for an undertaking which his friends thought impracticable.

In 1800 or 1801, Evans began a steam carriage at his own expense; but he had not proceeded far with it when he altered his intention, and applied the engine intended for the driving of a carriage to the driving of a small grinding-mill, in which it was found efficient. In 1804 he constructed, at Philadelphia, a second engine, of five-horse power, working on the high-pressure principle, which was placed on a large flat, or scow, mounted upon wheels. "This," says his biographer, "was considered a fine opportunity to show the public that his engine could propel both land and water conveyances. When the machine was finished, Evans fixed under it, in a rough and temporary manner, wheels with wooden axle-trees. Although the whole weight was equal to two hundred barrels of flour, yet his small engine propelled it up Market Street, and round the circle to the water-works, where it was launched into the Schuylkill. A paddle-wheel was then applied to its stern, and it thus was propelled down that river to the Delaware, and up the Delaware to the city, a distance of sixteen miles, in the presence of thousands of spectators." It does not appear that any farther trial was made of this road engine.

While the discussion of steam-power for road locomotion was pro-

ceeding in England, other projectors were advocating the extension of wagon-ways and railroads. Mr. Thomas, of Denton, near Newcastle-on-Tyne, read a paper before the Philosophical Society of that town in 1800, in which he urged the laying down of railways throughout the country, on the principle of the coal-wagon ways, for the general carriage of goods and merchandise; and Dr. James Anderson, of Edinburgh, about the same time, published his "Recreations of Agriculture," wherein he recommended that railways should be laid along the principal turnpike-roads, and worked by horse-power, which, he alleged, would have the effect of greatly reducing the cost of transport, and thereby stimulating all branches of industry.

Railways were adopted in places, for short distances, and in some cases lines were laid down of considerable length. One of the first constructed under the powers of an Act of Parliament was the Cardiff and Merthyr tram-road, about twenty-seven miles in length, for the accommodation of the iron-works of Plymouth, Wales, the Act for which was obtained in 1794. Another railroad, about twenty-eight miles in length, was constructed under the powers of an Act obtained in 1801, and accommodated the Tredegar and Sirhoway Iron-works and the Trevill Lime-works.

In the immediate neighborhood of London, another, the Wandsworth and Croydon tram-way, was made after 1800, extending southward to Merstham, in Surrey. All these were worked by horses, and in the case of the Merstham line, donkeys shared in the work. No proposal had yet been made to apply the power of steam.

On the day of opening the southern portion of the Merstham Railroad in 1805, a train of twelve wagons laden with stone, weighing in all thirty-eight tons, was drawn six miles in an hour by one horse, with apparent ease, down an incline of 1 in 120.

About the same time, the subject of road locomotion was brought into prominent notice by an important practical experiment conducted in a remote corner of the kingdom. The experimenter was a young man, then obscure, but afterward famous, who may be fairly regarded as THE INVENTOR OF THE RAILWAY LOCOMOTIVE, if any single individual be entitled to that appellation. This was Richard Trevithick, a person of extraordinary mechanical skill, but of marvelous ill fortune, who, though the inventor of many ingenious contrivances, and the founder of fortunes of many, himself died in extreme poverty, leaving behind him nothing but his great inventions and the recollection of his genius.

Richard Trevithick was born on the 13th of April, 1771, in the parish of Illogan, a few miles west of Redruth, in Cornwall. In the immediate neighborhood rises Castle-Carn-brea, a rocky eminence, supposed by Borlase to have been the principal seat of Druidic worship in the West of England. The hill commands an extraordinary view over one of the richest mining fields of Cornwall, from Chacewater and Redruth to Camborne.

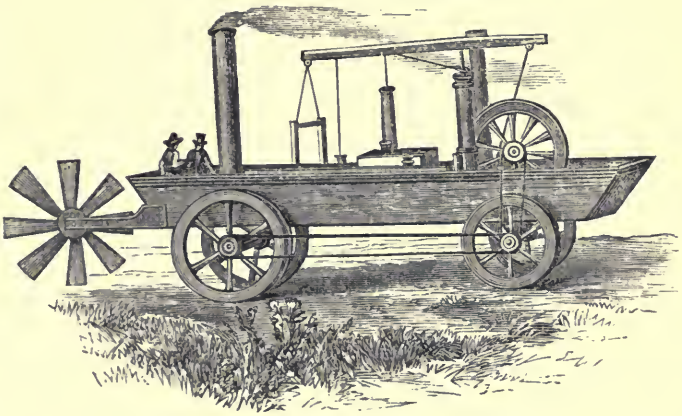
Trevithick's father acted as purser at several of the mines. Though a man in good position and circumstances, he does not seem to have taken much pains with his son's education. Being an only child, he was very much indulged—among other things, in his dislike for the restraints and discipline of school; and he was left to wander about among the mines, spending his time in the engine-rooms, picking up information about pumping-engines and mining machinery.

His father, observing the boy's strong bent toward mechanics, placed him for a time as pupil with William Murdock, while the latter lived at Redruth, superintending Boulton & Watt's pumping-engines in the neighborhood. Trevithick doubtless learned much from that able mechanic. It is probable that he got his first idea of the road locomotive which he constructed from Murdock's ingenious little model, described in the life of Watt, the construction and action of which must have been quite familiar to him.

About that time there was an unusual demand for engineers, which it was found difficult to supply; and young Trevithick had no difficulty in getting an appointment. The father was astonished at his boy's presumption (as he supposed it to be) in undertaking such a responsibility, and begged the mine agents to reconsider their decision. But the result showed that they were justified in appointing young Trevithick, though he had not yet attained his majority.

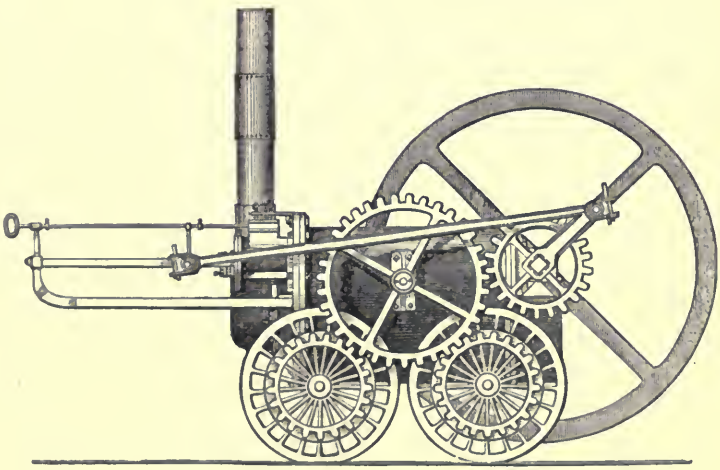
Like the other Cornish engineers, young Trevithick took an active part in opposing the Birmingham patent, and is said to have constructed several engines, with the assistance of William Bull (formerly an erector of Watt's machines), with the object of evading it. These engines are said to have been highly creditable to their makers, working to the entire satisfaction of the mine-owners. The issue of the Watt trial, however, which declared all such engines to be piracies, brought to an end for a time a business which would otherwise have proved a very profitable one, and Trevithick's partnership with Bull then came to an end.

While carrying on his business, Trevithick had frequent occasion to visit Mr. Harvey's iron foundery at Hayle, then a small one, but now one of the largest in the West of England. During these visits Trevithick became acquainted with the various members of Mr. Harvey's family, and married Miss Jane Harvey, in November, 1797. A few years later Trevithick engaged in partnership with his cousin, Andrew Vivian, also an engineer. They carried on engine-making at Camborne, a mining town a few miles south of Redruth. Watt's patent-right expired in 1800, and from that time engineers were free to make engines after their own methods. Trevithick was not content to follow beaten paths, but occupied himself in contriving various new methods of employing steam, economizing fuel, and increasing the effective power of the engine.



Oliver Evans' Road Engine, 1801.

See page 90.



Trevithick's Tram-Road Locomotive, 1804.

See page 97.

He early entertained the idea of making the expansive force of steam act directly on both sides of the piston, on the high-pressure principle, and thus getting rid of Watt's process of condensation. Although Cugnot had employed high-pressure steam in his road locomotive, and Murdock in his model, and although Watt had distinctly specified the action of steam at high-pressure as well as low, in his patents, the idea was not embodied in any practical working engine until taken in hand by Trevithick. The results of his long study were embodied in the patent which he took out in 1802, in his own and Vivian's name, for an improved steam-engine, and "the application thereof for driving carriages and other purposes."

The arrangement of Trevithick's engine was ingenious. It exhibited a beautiful simplicity of parts; the machinery was arranged effectively, uniting strength with solidity and portability, and enabling steam to be employed with very great rapidity, economy, and force. Watt's principal objection to using high-pressure steam consisted in the danger to which the boiler was exposed by internal pressure. Trevithick avoided this by using a cylindrical wrought-iron boiler, the form capable of presenting the greatest resistance to the expansive force of steam. Boilers of this kind were not, however, new. Oliver Evans, of Delaware, had made use of them in his high-pressure engines prior to the date of Trevithick's patent; and, as Evans did not claim the cylindrical boiler, it is probable that the invention was in use before his time. Nevertheless, Trevithick had the merit of introducing the round boilers into Cornwall, where they are still known as "Trevithick boilers." The saving in fuel effected by their use was such that in 1812 the Messrs. Williams, of Scorrier, made Trevithick a present of 300*l.*, in acknowledgment of the benefits arising from that source alone.

Trevithick's steam carriage was the most compact and handsome yet invented, and, as regards arrangement, has scarcely to this day been surpassed. It consisted of a carriage capable of accommodating some half dozen passengers. Underneath the engine and machinery was inclosed, in about the size of an orchestra drum, the whole being supported on four wheels—two in front, by which it was guided, and two behind, by which it was driven. The engine had but one cylinder. The piston-rod outside the cylinder was double, and drove a cross-piece, working in guides, on the opposite side of the cranked axle to the cylinder, the crank of the axle revolving between the double parts of the piston-rod. Toothed wheels were attached to this axle, which worked into other toothed wheels fixed on the axle of the driving-wheels. The steam-cocks were opened and shut by a connection with the crank-axle; and the force-pump, with which the boiler was supplied with water, was also worked from it, as were the bellows to blow the fire and thereby keep up the combustion in the furnace.

The specification clearly alludes to the use of the engine on rail-

roads as follows: "It is also to be noticed that we do occasionally, or in certain cases, make the external periphery of the wheels uneven by projecting heads of nails or bolts, or cross grooves or fittings to railroads where required, and that in cases of hard pull we cause a lever, belt, or claw to project through the rim of one or both of the said wheels, so as to take hold of the ground, but that, in general, the ordinary structure or figure of the external surface of those wheels will be found to answer the intended purpose." The specification also shows the application of the high-pressure engine on the same principle to the driving of a sugar-mill, or for other purposes where a fixed power is required, dispensing with condenser, cistern, air-pump, and cold-water pump. In the year 1803, a small engine of this kind was erected after Trevithick's plan, which worked by steam of at least 30lbs. on the inch above atmospheric pressure, and gave much satisfaction.

The first experimental steam carriage was constructed by Trevithick & Vivian in their workshops at Camborne, in 1803, and was tried on the public road adjoining the town, and in the town itself. John Petherick, a native of Camborne, who was alive in 1858, stated in a letter that he well remembered seeing the engine, worked by Mr. Trevithick himself, come through the place, to the great wonder of the inhabitants. He says, "The experiment was satisfactory only as long as the steam pressure could be kept up. During that continuance, Trevithick called upon the people to 'jump up,' so as to create a load on the engine; and it soon became covered with men, which did not seem to make any difference to the power or speed so long as the steam was kept up. This was sought to be done by the application of a cylindrical horizontal bellows worked by the engine itself; but the attempt to keep up the power of the steam for any considerable time proved a failure."

Trevithick made several alterations in the engine, improving it, and its success determined him to take it to London, and exhibit it as a novelty in steam mechanism. It was run by road from Camborne to Plymouth, a distance of ninety miles. At Plymouth, it was shipped for London, where it arrived in safety, and excited much curiosity. Sir Humphry Davy, Mr. Davies Gilbert, and other scientific gentlemen, inspected the machine, and rode upon it. Several of them took the steering of it by turns, and they expressed their satisfaction with the mechanism by which it was directed. Sir Humphry, writing to a friend in Cornwall, said, "I shall soon hope to hear that the roads of England are the haunts of Captain Trevithick's dragons—a characteristic name." After the experiment at Lord's, the carriage was run along the New-road, and down Gray's-Inn Lane, to the premises of a carriage-builder in Long Acre. To show the adaptability of the engine for fixed uses, Trevithick had it taken from the carriage on the day after this trial, and removed to

the shop of a cutler, where he applied it with success to the driving of the machinery.

The steam carriage became the talk of the town, and public curiosity increasing, Trevithick resolved to inclose a piece of ground, and admit persons to see the engine at so much a head. He had a tram-road laid down in an elliptical form, and the carriage was run round it on the rails in the sight of great numbers. On the second day, another crowd collected, but, for some unknown reason, the place was closed and the engine removed.

While the steam carriage was being exhibited, a gentleman was laying heavy wagers as to the weight which could be hauled by a single horse on the Wandsworth and Croydon iron tram-way; and the number and weight of wagons drawn by the horse were something surprising. Trevithick very probably put the two things together—the steam horse and the iron-way—and kept the performance in mind when he proceeded to construct his second or railway locomotive. In the mean time, having dismantled his steam carriage, sent back the phaeton to the coach-builder to whom it belonged, and sold the little engine which had worked the machine, he returned to Camborne to carry on his business. In the course of the year 1803, he went to Pen-y-darran, in South Wales, to erect a forge engine, and, when it was finished, he began the erection of a railway locomotive—the first ever constructed. There were already, several lines of rail laid down in the district, for the accommodation of the coal and iron works. That between Merthyr Tydvil and Cardiff, was the longest and most important, and it had been at work for some years. It had probably occurred to Trevithick that here was a fine opportunity for putting to practical test the powers of the locomotive, and he proceeded to construct one in the workshops.

This first railway locomotive was finished and tried upon the Merthyr tram-road on the 21st of February, 1804. It had a cylindrical wrought-iron boiler, with flat ends. The furnace and flue were inside the boiler, the flue returning, having its exit at the same end at which it entered, so as to increase the heating surface. The cylinder, 4¾ in. in diameter, was placed horizontally in the end of the boiler, and the waste steam was thrown into the stack. The wheels were worked in the same manner as in the carriage-engine already described; and a fly-wheel was added on one side, to secure a continuous rotary motion at the end of each stroke of the piston. The pressure of the steam was about 40 lbs. on the inch. The engine ran upon four wheels, coupled by cog-wheels, and the four wheels were smooth.

On the first trial, this engine drew for a distance of nine miles, ten tons of bar iron, together with the necessary carriages, water, and fuel, at the rate of five and a half miles an hour. Rees Jones, an old engine-fitter, who helped to erect the engine, gave the following account of its performances: "When the engine was finished, she

was used for bringing down metal from the old forge. She worked very well; but frequently, from her weight, broke the tram-plates, and also the hooks between the trams. After working for some time in this way, she took iron from Pen-y-darran down the Basin Road, upon which road she was intended to work. On the journey she broke a great many tram-plates; and, before reaching the Basin, she ran off the road, and was brought back by horses. The engine was never used as a locomotive after this; but was used as a stationary engine for several years."

As a locomotive, it was a remarkable success. The defect lay not in the engine so much as in the road. This was formed of plate-rails of cast iron, *with a guiding flange upon the rail instead of on the engine-wheels, as in the modern locomotive.* The rails were also of a very weak form, considering the quantity of iron in them; and, though they were sufficient to bear loaded wagons mounted on small wheels, as ordinarily drawn along them by horses, they were found quite insufficient to bear Trevithick's engine. To relay the road of sufficient strength would have involved a heavy out-lay, which the owners were unwilling to incur, not yet perceiving the advantage in economy of employing engine in lieu of horse power. The locomotive was taken off the road, and the experiment, successful though it had been, brought to an end.

Trevithick had, however, in a great measure, solved the problem of steam locomotion on railways. He had produced a compact engine, working on the high-pressure principle, capable of carrying fuel and water sufficient for a journey of considerable length, and of drawing loaded wagons at five and a half miles an hour. He had shown by his smooth-wheeled locomotive that the weight had given sufficient adhesion for hauling the load. He had discharged the steam into the chimney, though not for the purpose of increasing the draught, as he employed bellows for that purpose. Trevithick's friend, Mr. Davies Gilbert, afterward President of the Royal Society, especially noticed the effect of discharging the waste steam into the chimney, and observed that, when moving, each puff brightened the fire, while scarcely any steam or smoke came from the chimney.

Mr. Gilbert published the result of his observations in "Nicholson's Journal," and Mr. Nicholson proceeded to make a series of experiments, the result of which was, that in 1806 he took out a patent for a steam-blasting apparatus; but it is remarkable that Trevithick himself remained skeptical as to its use, as late as 1815.

In the mean time Trevithick occupied himself as a general engineer, and was ready for any enterprise likely to give scope to his inventive skill. In whatever work employed, he was sure to introduce new methods and arrangements, if not new inventions. He was full of speculative enthusiasm, a great theorist, and yet an indefatigable experimenter. Trevithick was not satisfied to carry on a prosperous engine business in Cornwall. Camborne was too small for him, and

the Cornish mining districts presented too limited a field for his ambitious spirit. So he went to London, the patent-office drawing him as the loadstone does the needle. In 1808, he took out two patents, one for "certain machinery for towing, driving, or forcing and discharging ships and other vessels of their cargoes," and the other for "a new method of stowing cargoes of ships." In 1809, he took out another patent for constructing docks, ships, etc., and propelling vessels.

In these patents, Trevithick was associated with one Robert Dickinson, of Great Queen Street, but his name stands first in the specification, wherein he describes himself as "of Rotherhithe, in the county of Surrey, engineer." While Trevithick lived at Rotherhithe, he entered upon a remarkable enterprise—no less than the construction of a tunnel under the Thames—a work which was carried out with so much difficulty by Sir Isambard Brunel some twenty years later.

Trevithick returned to Camborne in 1809, where we find him busily occupied with new projects, and introducing his new engine worked by water power, as well as in perfecting his high-pressure engine and its working by expansion. In 1815, Trevithick took out a farther patent, embodying several important applications of steam power. One of these consisted in "causing steam of a high pressure to spout out against the atmosphere, and by its recoiling force to produce motion in a direction contrary to the issuing steam, similar to the motion produced in a rocket, or to the recoil of a gun." In another part of his specification, Trevithick described the screw-propeller as "a screw or a number of leaves placed obliquely round an axis similar to the vanes of a smoke-jack, which shall be made to revolve with great speed in a line with the required motion of the ship, or parallel to the same line of motion." In a second part of the specification, he described a plunger or pole-engine, in which the steam worked at high pressure. The first engine of this kind was erected by Trevithick at Herland, in 1815, but the result was not equal to his expectations, though the principle was afterward successfully applied by Mr. William Sims, who purchased the patent-right.

In this specification, Trevithick also described a tubular boiler of a new construction, for the purpose of more rapidly producing high-pressure steam, the heating surface being extended by constructing the boiler of a number of small perpendicular tubes, closed at the bottom, but all opening at the top into a common reservoir, from whence they received their water, and into which the steam of all the tubes was united.

While Trevithick was engaged in these ingenious projects, an event occurred which, though it promised to issue in the most splendid results, proved the greatest misfortune of his life. We refer to his adventures in connection with the gold mines of Peru. Many of the richest of them had been drowned out, the pumping machinery of the country being incapable of clearing them of water. The districts

in which they were situated were almost inaccessible to ordinary traffic, all transport being conducted on the backs of men or of mules. The parts of an ordinary condensing engine were too ponderous to be carried up these mountain heights, and it was evident that, unless some lighter sort of engine could be employed, the mines in question must be abandoned.

Mr. Uvillé, a Swiss gentleman interested in South American mining, went from Peru to England in 1811, for the purpose of obtaining such an engine, but he received no encouragement. He was about to return to Lima, in despair of accomplishing his object, when, accidentally passing a shop-window in Fitzroy Square, he caught sight of an engine exposed for sale. It was the engine constructed by Trevithick for his first locomotive, which he had sold some years before. Mr. Uvillé was pleased with its construction and mode of action, and at once purchased it. Arrived in South America, he had the engine transported across the mountains to the rich mining district of Pasco, a hundred miles north of Lima, to try it on the highest mountain ridges.

The experiment was satisfactory, and an association of influential gentlemen was immediately formed to introduce the engine on a large scale, and enter into contracts with the mine-owners for clearing their shafts of water. The Viceroy of Peru approved the plan, and the association dispatched Mr. Uvillé to England to purchase the engines. He took ship for Falmouth about the end of 1812, for the purpose of finding out Trevithick. He only knew of Trevithick by name, and that he lived in Cornwall. Full of his subject, he could not refrain from conversing on the subject with passengers on board the ship. It so happened that one of them—a Mr. Teague—was a relative of Trevithick, who, shortly after their landing, introduced him to the inventor; in the course of a few days, Uvillé was enabled to discuss the scheme with Trevithick, at his own house at Camborne. The result was an order for a number of high-pressure pumping-engines, which were put in hand, and on the 1st of September, 1814, nine of them were shipped at Portsmouth for Lima, accompanied by Uvillé and three Cornish engineers, one of whom was Bull, Trevithick's first partner.

The engines reached Lima, and were welcomed by a royal salute and public rejoicings. Such was the difficulty of transporting the materials across the mountains, that it was the middle of the year 1816 before the first engine was set to work to pump out the Santa Rosa mine, in the royal mineral territory of Yaüricocha. The association to whom the engines belonged had entered into a contract to drain this, among other mines, on condition of sharing one-fourth of the gross produce of the ores. The first results were so satisfactory that the projectors were filled with no less astonishment than delight, and they "anticipated a torrent of silver that would fill surrounding nations with astonishment."

In the mean time Trevithick was at home manufacturing the remaining engines, also new coining apparatus for the Peruvian mint, and furnaces for purifying silver ore by fusion. With these engines and apparatus he sailed for Lima in October, 1816, reaching there the following February. He was received with almost royal honors, and was officially announced as "Don Ricardo Trevithick, an eminent professor of mechanics, machinery, and mineralogy, inventor and constructor of the engines of the last patent," and was escorted to the mines accompanied by a guard of honor. The news occasioned great rejoicings, and the chief men came down the mountains to welcome him. Uvillé wrote to his associates that Trevithick had been sent out "by heaven for the prosperity of the mines, and that the lord warden proposed to erect his statue in solid silver." Trevithick wrote to his friends in Cornwall that he had before him the prospect of almost boundless wealth, having, in addition to his emoluments as patentee, obtained a fifth share in the Lima Company, which, he expected, on a moderate computation, would yield him about 100,000*l.* a year.

But these brilliant prospects were suddenly blasted by the Peruvian revolution which broke out in the following year. While Mr. Boaze was reading his paper before the Royal Geological Society of Cornwall, in which these anticipations of Trevithick's fame and fortune were described, Lord Cochrane was on his way to South America to take command of the Chilian fleet in its attack on the ports of Peru, still in the possession of the Spaniards.

Toward the end of 1818, Lord Cochrane hoisted his flag, and assailed the Spanish fleet in Callao Harbor. This proved the signal for a general insurrection, during the continuance of which the commercial and industrial affairs of the province were completely paralyzed.

The result to Trevithick was, that he and his partners in the Mining Company were consigned to ruin. It has been said that the engineer joined the patriotic party, and invented for Lord Cochrane an ingenious gun-carriage, centered and equally balanced on pivots, and easily worked by machinery; but of this no mention is made by Lord Cochrane in his "Memoirs." The Patriots kept Trevithick on the mountains as a sort of patron and protector of their interests; but for this very reason he became proportionately obnoxious to the Royalists, who destroyed his engines, and broke up his machinery wherever they could. At length he determined to escape from Peru, and fled northward across the mountains, accompanied by a single friend, making for the Isthmus of Panamá. In the course of this long, toilsome, and dangerous journey, he encountered great privations; he slept in the forest at night, traveled on foot by day, and crossed the streams by swimming. At length, his clothes torn, worn, and hanging almost in shreds, and his baggage all lost, he succeeded in reaching the port of Carthagena, on the Gulf of Darien, almost destitute.

Here he encountered Robert Stephenson, who was waiting at the one inn of the place until a ship was ready to set sail for England. Stephenson had finished his engagement with the Columbian Mining Company, and was eager to return home. When Trevithick entered the room, Stephenson at once saw that he was an Englishman. He stood some six feet in height, and, though well proportioned when in ordinary health, he was now gaunt and hollow, the picture of privation and misery.

Stephenson made up to the stranger, and was not a little surprised to find that he was no other than the famous engineer, Trevithick, the builder of the first patent locomotive, and who, when he last heard of him, was accumulating so gigantic a fortune in Peru. Though now penniless, Trevithick was as full of speculation as ever, and related to Stephenson that he was on his way home for the purpose of organizing another gold-mining company, which should make the fortunes of all who took part in it. He was, however, unable to pay for his passage, and Stephenson lent him the money for the purpose.

As there was no vessel likely to sail for England soon, Stephenson and Trevithick took the first ship for New York. After a passage full of adventure and peril, the vessel was driven on a lee-shore, and the passengers and crew barely escaped with their lives. On reaching New York, Trevithick immediately set sail for England, and landed at Falmouth in October, 1827, taking back with him a pair of silver spurs, the only remnant of those "torrents of silver" which his engines were to raise from the mines of Peru.

Very soon Trevithick memorialized the government for some remuneration adequate to the great benefit which the country had derived from his invention of the high-pressure steam-engine, and his introduction of the cylindrical boiler. The petition was prepared in December, 1827, and was cheerfully signed by the leading mine-owners and engineers in Cornwall; but there their efforts on his behalf ended.

He took out two more patents—one in 1831, for a new method of heating apartments, and another in 1832, for improvements in the steam-engine, and the application of steam power to navigation and locomotion, but neither of them seems to have proved of any service to him.

Strange to say, though Trevithick had been so intimately connected with the practical introduction of the Locomotive, he seems to have taken but little interest in its introduction upon railways, but confined himself to advocating its employment on common roads as its most useful application. On the 12th of August, 1831, by which time the Liverpool and Manchester line was in full work, Trevithick appeared as a witness before the select committee of the House of Commons on the employment of steam carriages on common roads. He said "he had been abroad a good many years, and had had nothing to do

with steam carriages until very lately. He had it now, however, in contemplation to do a great deal on common roads, and, with that view, had taken out a patent for an entirely new engine, the arrangements in which were calculated to obviate all the difficulties which had hitherto stood in the way of traveling on common roads." Though in many things he was before his age, here he was unquestionably behind it. But Trevithick was now an old man; his constitution was broken, and his energy worked out. Younger men were in the field, less ingenious and speculative, but more practical and energetic; and in the blaze of their fame the Cornish engineer was forgotten.

During the last year of his life Trevithick resided at Dartford, in Kent. He had induced the Messrs. Hall, the engineers of that place, to give him an opportunity of testing the value of his last invention —that of a vessel driven by the ejection of water through a tube— and he went there to superintend the construction of the necessary engine and apparatus. The vessel was duly fitted up, and several experiments were made with it in the adjoining creek, but it did not realize a speed of more than four miles an hour. Trevithick, being of opinion that the engine-power was insufficient, proceeded to have a new engine constructed, to the boiler of which, within the furnace, numerous tubes were attached, round which the fire played. So much steam was raised by this arrangement that the piston "blew," but still the result of the experiments was unsatisfactory. While laboring at these inventions, and planning new arrangements never to be carried out, the engineer was seized by the illness of which he died, on the 22d of April, 1833, in the 62d year of his age.

As Trevithick was entirely without means at his death, besides being some sixty pounds in debt to the landlord of the Bull Inn, where he had been lodging for nearly a year, he would propably have been buried at the expense of the parish but for the Messrs. Hall and their workmen, who raised a sum sufficient to give the "great inventor" a decent burial; and they followed his remains to the grave in Deptford Church-yard, where he lies without a stone to mark his resting-place.

There can be no doubt as to the great mechanical ability of Trevithick. He was a man of original and intuitive genius in invention. Every mechanical arrangement which he undertook to study issued from his hands transformed and improved. But there he rested. He struck out many inventions, and left them to take care of themselves. His great failing was the want of perseverance. His mind was always full of projects; but his very genius led him astray in search of new things, while his imagination often outran his judgment. Hence his life was but a series of beginnings.

Look at the extraordinary things that Trevithick began. He made the first railway locomotive, and cast the invention aside, leaving it to others to take it up and prosecute it to a successful issue. He introduced, if he did not invent, the cylindrical boiler and the high-

pressure engine, which increased so enormously the steam-power of the world; but he reaped the profits of neither. He invented an oscillating engine and a screw propeller; he took out a patent for using superheated steam, as well as for wrought-iron ships and wrought-iron floating docks; but he left it to others to introduce these several inventions.

Never was there such a series of splendid mechanical beginnings. He began a Thames Tunnel, and abandoned it. He went to South America with the prospect of making a gigantic fortune, but he had scarcely begun to gather in his gold than he was forced to fly, and returned home destitute. This, however, was a misfortune which no efforts on his part, could have prevented. But even when he had the best chances, Trevithick threw them away. When he had brought his road locomotive to London to exhibit, and was beginning to excite the curiosity of the public respecting it, he suddenly closed the exhibition in a fit of caprice, removed the engine, and returned to Cornwall in a tiff. The failure, also, of the railroad on which his locomotive traveled so provoked him that he at once abandoned the enterprise in disgust.

There may have been some moral twist in the engineer's character, into which we do not seek to pry; but it seems clear that he was wanting in that resolute perseverance, that power of fighting an up-hill battle, without which no great enterprise can be conducted to a successful issue. In this respect, the character of Richard Trevithick presents a remarkable contrast to that of George Stephenson, who took up only one of the many projects which the other had cast aside, and by dint of application, industry, and perseverance, carried into effect one of the most remarkable, but peaceful revolutions which has ever been accomplished in any age or country.

We now proceed to describe the history of this revolution in connection with the Life of George Stephenson, and to trace the locomotive through its several stages of development until we find it recognized as one of the most vigorous and untiring workers in the entire world of industry.

GEORGE STEPHENSON.

THE colliery village of Wylam is situated on the north bank of the Tyne, about eight miles west of Newcastle. The Newcastle and Carlisle Railway runs along the opposite bank; and the traveler by that line sees the usual signs of a colliery in the unsightly pumping-engines surrounded by heaps of ashes, coal-dust, and slag, while a neighboring iron-furnace in full blast throws out dense smoke and loud jets of steam by day, and lurid flames at night. These works form the nucleus of the village, which is almost entirely occupied by coal-miners and iron-furnace-men. The place is remarkable for its large population, but not for its cleanness or neatness as a village; the houses, as in most colliery villages, being the property of the owners or lessees, who employ them in temporarily accommodating the work-people, against whose earnings there is a weekly set-off for house and coals. About the end of last century, the estate of which Wylam forms part, belonged to Mr. Blackett, a gentleman of considerable celebrity in coal-mining, then more generally known as the proprietor of the "Globe" newspaper.

There is nothing to interest one in the village itself. But a few hundred yards from its eastern extremity stands a humble detached dwelling, which will be interesting to many as the birth-place of one of the most remarkable men of our times—George Stephenson, the Railway Engineer. It is a common, two-storied, red-tiled, rubble house, portioned off into four laborers' apartments.

The lower room in the west end of this house was the home of the Stephenson family, and there George Stephenson was born, the second of a family of six children, on the 9th of June, 1781. The apartment is now, what it was then, an ordinary laborer's dwelling; its walls are unplastered, its floor is of clay, and the bare rafters are exposed overhead.

Robert Stephenson, or "Old Bob," as the neighbors familiarly called him, and his wife Mabel, were a respectable couple, careful and hard-working. Robert Stephenson's father was a Scotchman, who came into England in the capacity of a gentleman's servant.

Mabel, his wife, was the second daughter of Robert Carr, a dyer at Ovingham. The Carrs were, for several generations, the owners of a house in that village adjoining the church-yard. Mabel Stephenson was a woman of somewhat delicate constitution, and troubled occasionally, as her neighbors said, with "the vapors."

George Stephenson was the the second of a family of six children.

An old Wylam collier, who remembered George Stephenson's father, thus described him: "Geordie's fayther war like a peer o' deals nailed thegither, an' a bit o' flesh i' th' inside; he war as queer as Dick's hatband—went thrice aboot, an' wudn't tie. His wife Mabel war a delicat' boddie, an' varry flighty. They war an honest family, but sair hadden doon i' th' world." Indeed, the earnings of old Robert did not amount to more than twelve shillings a week; and, as there were six children to maintain, the family, during their stay at Wylam, were necessarily in very straitened circumstances. The father's wages being barely sufficient, even with the most rigid economy, for the sustenance of the household, there was little to spare for clothing, and nothing for education, so that none of the children were sent to school.

Old Robert was a general favorite in the village, especially among the children, whom he was accustomed to draw about him while tending the engine-fire, and feast their young imaginations with tales of Sinbad the Sailor and Robinson Crusoe, besides others of his own invention; so that "Bob's engine-fire" came to be the most popular resort in the village. Another feature in his character, by which he was long remembered, was his affection for birds and animals; and he had many tame favorites of both sorts, which were as fond of resorting to his engine-fire as the boys and girls themselves. In the winter time he had usually a flock of tame robins about him; and they would come hopping familiarly to his feet to pick up the crumbs which he had saved for them out of his humble dinner. At his cottage he was rarely without one or more tame blackbirds, which flew about the house, or in and out at the door. In summer time he would go bird-nesting with his children; and one day he took his little boy, George, to see a blackbird's nest for the first time. Holding him up in his arms, he let the wondering boy peep down, through the branches held aside for the purpose, into a nest full of young birds—a sight which the boy never forgot, but used to speak of with delight to his intimate friends, when he himself had grown an old man.

The boy, George, led the ordinary life of working people's children. He played about the doors; went bird-nesting when he could; and ran errands to the village. He was also an eager listener, with the other children, to his father's curious tales, and he early imbibed from him his affection for birds and animals. In course of time he was promoted to the office of carrying his father's dinner to him while at work, and at home he helped to nurse his younger brothers and sisters. One of his earliest duties was to see that the other children

were kept out of the way of the chaldron wagons, which were then dragged by horses along the wooden tram-road immediately in front of the cottage door.

This wagon-way was the first in the northern district on which the experiment of a locomotive engine was tried. But, at the time of which we speak, the locomotive had scarcely been dreamt of in England as a practicable working power; horses only were used to haul the coal; and one of the first sights with which the boy was familiar was the coal-wagons dragged by them along the wooden railway at Wylam. Thus eight years passed; after which, the coal having been worked out on the north side, the old engine, which had grown "dismal to look at," as an old workman described it, was pulled down; and then old Robert, having obtained employment as a fireman at the Dewley Burn Colliery, removed with his family to that place.

Young though he was, George was now of an age to be able to contribute something toward the family maintenance; for, in a poor man's house, every child is a burden until his little hands can be turned to profitable account. That the boy was shrewd and active, and possessed of a ready mother-wit, will be evident enough from the following incident. One day his sister Nell went into Newcastle to buy a bonnet, and Geordie went with her "for company." At a draper's shop, in the Bigg Market, Nell found a "chip" quite to her mind, but on pricing it, alas! it was found to be fifteen pence beyond her means. Girl-like, she had set her mind upon that bonnet, and no other would please her. She accordingly left the shop very much dejected. But Geordie said, "Never heed, Nell; come wi' me, and I'll see if I canna win siller enough to buy the bonnet; stand ye there till I come back." Away ran the boy, and disappeared amid the throng of the market, leaving the girl to wait his return. Long and long she waited, until it grew dusk, and the market-people had nearly all left. She had begun to despair, and fears crossed her mind that Geordie must have been run over and killed, when at last up he came running, almost breathless. "I've gotten the siller for the bonnet, Nell!" cried he. "Eh, Geordie!" she said, "but hoo hae ye gotten it?" "Hauddin the gentlemen's horses!" was the exultant reply. The bonnet was forthwith bought, and the two returned to Dewley in triumph.

George's first regular employment was of a very humble sort. A widow, named Grace Ainslie, then occupied the neighboring farmhouse of Dewley. She kept a number of cows, and had the privilege of grazing them along the wagon-ways. She needed a boy to herd the cows, to keep them out of the way of the wagons, and prevent their straying or trespassing on the neighbors' "liberties;" the boy's duty was also to bar the gates at night after all the wagons had passed. George petitioned for this post, and, to his great joy, he was appointed, at the pay of twopence a day.

It was light employment, and he had plenty of spare time on his hands, which he spent in bird-nesting, making whistles out of reeds and scrannel straws, and erecting liliputian mills in the little water-streams that ran into the Dewley bog. But his favorite amusement at this early age was erecting clay engines in conjunction with his playmate, Bill Thirlwall. The place is still pointed out where the future engineers made their first essays in modeling. The boys found the clay for their engines in the adjoining bog, and the hemlocks which grew about supplied them with imaginary steam-pipes. They even proceeded to make a miniature winding-machine in connection with their engine, and the apparatus was erected upon a bench in front of the Thirlwalls' cottage. Their corves were made out of hollowed corks; their ropes were supplied by twine; and a few bits of wood gleaned from the refuse of the carpenters' shop completed their materials. With this apparatus the boys made a show of sending the corves down the pit and drawing them up again, much to the marvel of the pitmen. But some mischievous person about the place seized the opportunity early one morning of smashing the fragile machinery, greatly to the grief of the young engineers. We may mention, in passing, that George's companion afterward became a workman of repute, and creditably held the office of engineer at Shilbottle, near Alnwick, for a period of nearly thirty years.

As Stephenson grew older and abler to work, he was set to lead the horses when plowing, though scarce big enough to stride across the furrows; and he used afterward to say that he rode to his work in the mornings at an hour when most other children of his age were asleep in their beds. He was also employed to hoe turnips, and do similar farm-work, for which he was paid fourpence a day. But his highest ambition was to be taken on at the colliery where his father worked; and he shortly joined his elder brother James there as a "corf-bitter," or "picker," to clear the coal of stones, bats, and dross. His wages were then advanced to sixpence a day, and afterward to eightpence when he was sent to drive the gin-horse.

Shortly after, George went to Black Callerton Colliery to drive the gin there; and, as that colliery lies about two miles across the fields from Dewley Burn, the boy walked that distance early in the morning to his work, returning home late in the evening. One of the old residents described him as a "grit-growing lad, with bare legs an' feet; very quick-witted, and full of fun and tricks: indeed, there was nothing under the sun but he tried to imitate." He was usually foremost also in the sports and pastimes of youth. Among his first strongly developed tastes was the love of birds and animals, which he inherited from his father.

After he had driven the gin for some time, he was taken on as assistant to his father in firing the engine. He used to relate how he was wont to hide himself when the owner of the colliery went round, in case he should be thought too little a boy to earn the

wages paid him. His young ambition was to be an engine-man; and to be an assistant fireman was the first step toward this position. Great, therefore, was his joy when, at about fourteen years of age, he was appointed assistant fireman, at a shilling a day.

Other workings of the coal were opened out in the neighborhood, and to one of these George was removed as fireman on his own account, where he had for his mate a young man named Coe. They worked together there for about two years, by twelve-hour shifts. He was now fifteen years years old. He endeavored to attain such a knowledge of his engine as would eventually lead to his employment as engine-man, with its accompanying advantage of higher pay. He was a steady, sober, hard-working young man, but nothing more in the estimation of his fellow-workmen.

One of his favorite pastimes in by-hours was trying feats of strength with his companions. Although in frame he was not particularly robust, yet he was big and bony, and considered very strong for his age. At throwing the hammer, George had no compeer. At lifting heavy weights off the ground from between his feet, by means of a bar of iron passed through them—placing the bar against his knees as a fulcrum, and then straightening his spine and lifting them sheer up—he was also very successful. On one occasion he lifted over eight hundred pounds—a striking indication of his strength of bone and muscle.

When at Throckley Bridge, his wages were raised to 12*s.* a week. On coming out of the foreman's office that Saturday evening, he announced the fact to his fellow-workmen, adding triumphantly, "I am now a made man for life!"

A pumping-engine was erected about half a mile west of Newburn, and old Stephenson went to work it as fireman, his son George acting as the engine-man or plugman. At that time he was about seventeen years old—a very youthful age at which to fill so responsible a post. He had thus got ahead of his father in his station, for the plugman holds a higher grade than the fireman, requiring more practical knowledge and skill.

From the time that George Stephenson was appointed fireman, and more particularly afterward as engine-man, he applied himself so assiduously and successfully to the study of the engine and its gearing—taking the machine to pieces in his leisure hours for the purpose of cleaning it and understanding its various parts—that he soon acquired a thorough practical knowledge of its construction and mode of working, and very rarely needed to call the engineer of the colliery to his aid. His engine became a sort of pet with him, and he was never wearied of watching and inspecting it with admiration.

There is, indeed, a peculiar fascination about an engine to the person whose duty it is to watch and work it. It is almost sublime in

its untiring industry and quiet power; capable of performing the most gigantic work, yet so docile that a child's hand may guide it. No wonder, therefore, that the workman who is the daily companion of this life-like machine, and is constantly watching it with anxious care, at length comes to regard it with a degree of personal interest and regard. This daily contemplation of the steam-engine, and the sight of its steady action, is an education of itself to an ingenious and thoughtful man. And it is a remarkable fact, that nearly all that has been done for the improvement of this machine has been accomplished, not by philosophers and scientific men, but by laborers, mechanics, and engine-men. Indeed, it would appear as if this were one of the departments of practical science in which the higher powers of the human mind must bend to mechanical instinct.

Stephenson was now in his eighteenth year, but, like many of his fellow-workmen, he had not yet learned to read. All that he could do was to get some one to read for him by his engine-fire, out of any book or stray newspaper which found its way into the neighborhood. Bonaparte was then overrunning Italy, and astounding Europe by his brilliant succession of victories; and there was no more eager auditor of his exploits, as read from the newspaper accounts, than the young engine-man at the Water-row Pit.

Modeling of engines in clay continued to be one of his favorite occupations. He made models of engines which he had seen, and of others which were described to him. These attempts were an improvement upon his first trials at Dewley Burn bog, when occupied there as a herd-boy. He was, however, anxious to know something of the wonderful engines of Watt, and was told that they were to be found fully described in books, which he must search for information as to their construction, action, and uses. But, alas! Stephenson could not read; he had not yet learned even his letters.

He shortly found that, to advance farther as a skilled workman, he must master this wonderful art of reading. Although a grown man, he was not ashamed to go to school to learn his letters.

His first school-master was Robin Cowens, who kept a night-school. George took lessons in spelling and reading three nights in the week, costing threepence a week, and at the age of nineteen he was proud to be able to write his own name. A Scotch dominie, named Andrew Robertson, set up a night-school in the village of Newburn in the winter of 1799. George accordingly began taking lessons from him, paying fourpence a week. Robert Gray told the author that George "took to figures wonderful." George's secret was his perseverance. He worked out the sums in his by-hours, improving every minute of his spare time by the engine-fire. In the evenings, he took to Robertson the sums which he had "worked," and new ones were "set" for him to study out the following day. Thus his progress was rapid.

George still found time to attend to his favorite animals while work-

ing; like his father, he used to tempt the robin-redbreasts to hop and fly about him at the engine-fire by the bait of bread-crumbs saved from his dinner. But his chief favorite was his dog—so sagacious that he almost daily carried George's dinner to him at the pit. The tin containing the meal was suspended from the dog's neck, and, thus laden, he proceeded faithfully from Jolly's Close to Water-row Pit, quite through the village of Newburn. He turned neither to left nor right, nor heeded the barking of curs at his heels. But his course was not unattended with perils. One day the big, strange dog of a passing butcher, espying the engine-man's messenger with the tin-can about his neck, ran after and fell upon him. There was a terrible tussle and worrying, which lasted for a brief while, and, shortly after, the dog's master, anxious for his dinner, saw his faithful servant approaching, bleeding but triumphant. The tin-can was still round his neck, but the dinner had been spilled in the struggle. Though George went without his dinner that day, he was prouder of his dog than ever when the circumstances of the combat were related to him by the villagers who had seen it.

It was while working at the Water-row Pit that Stephenson learned the art of braking an engine. This being one of the higher departments of colliery labor, and among the best paid, George was very anxious to learn it.

After working at the Water-row Pit and at other engines near Newburn for about three years, George went to Black Callerton early in 1810. Though only twenty years of age, his employers thought so well of him that they appointed him to the responsible office of brakeman at the Dolly Pit. For convenience' sake, he took lodgings at a small farmer's in the village, finding his own victuals, and paying so much a week for lodging and attendance. In the locality this was called "picklin in his awn poke neuk." It not unfrequently happens that the young workman about the collieries, when selecting a lodging, contrives to pitch his tent where the daughter of the house ultimately becomes his wife. This is often the real attraction that draws the youth from home, though a very different one may be pretended. The monotony of George Stephenson's occupation as a brakeman was somewhat varied by the change which he made, in his turn, from the day to the night shift. His wages while working at the Dolly Pit amounted to from 1*l.* 15*s.* to 2*l.* in the fortnight; but he gradually added to them as he became more expert at shoe-mending, and afterward at shoe-making.

Probably he was stimulated to take in hand this extra work by the attachment he had by this time formed for a young woman named Fanny Henderson, who officiated as servant in the small farmer's house in which he lodged. Her temper was one of the sweetest; and those who knew her were accustomed to speak of the charming modesty of her demeanor, her kindness of disposition, and, withal, her sound good sense.

Not long after he began to work at Black Callerton, he had a quarrel with Ned Nelson, a roystering bully, who was the terror of the village. Stephenson was not able to please this pitman by the way in which he drew him out of the pit, and Nelson swore at him grossly because of the clumsiness of his braking. George defended himself, and Nelson, after giving a great deal of abuse, threatened to kick George, and ended by challenging him to a pitched battle, when a day was fixed on which the fight was to come off. Great was the excitement at Black Callerton when it was known; all wished that he might beat Nelson, but they scarcely dared to say so. They came about him to inquire if it was really true that he was "goin' to fight Nelson." "Ay; never fear for me; I'll fight him." So on the evening appointed, after George had done his day's labor, he went into the Dolly Pit Field, where his already exulting rival was ready to meet him. George stripped, and "went in" like a practiced pugilist, though it was his first and last fight. After a few rounds, George's wiry muscles and practiced strength enabled him severely to punish his adversary and to secure an easy victory.

This circumstance is related in illustration of Stephenson's personal pluck and courage, and it was thoroughly characteristic of the man. He was no pugilist, and the reverse of quarrelsome. But he would not be put down by the bully of the colliery, and he fought him. There his pugilism ended; they afterward shook hands, and continued good friends. In after life Stephenson's mettle was often as hardly tried, though in a different way, and he did not fail to exhibit the same courage in contending with the bullies of the railway world as he showed in his encounter with Ned Nelson, the fighting pitman of Callerton.

ENGINE-MAN AT WILLINGTON QUAY AND KILLINGWORTH.

George Stephenson had now acquired the character of an expert workman. He was diligent and observant while at work, and sober and studious when the day's work was done. On pay-Saturday afternoons, when the pit-men held their fortnightly holiday, occupying themselves chiefly in cock-fighting and dog-fighting in the adjoining fields, followed by adjournments to the "yel-house," George was accustomed to take his engine to pieces, for the purpose of obtaining "insight," and he cleaned all the parts, and put the machine in thorough working order before leaving her.

After working at Callerton for about two years, Stephenson received an offer to take charge of the engine on Willington Ballast Hill at advanced wages. He determined to accept it, and at the same time, to marry Fanny Henderson, and begin house-keeping on his own account. Though he was only twenty-one years old, he had contrived, by thrift, steadiness, and industry, to save as much money

as enabled him, with the help of Fanny's small hoard, to take a cottage-dwelling at Willington Quay, and furnish it in a humble but comfortable style for the reception of his bride.

When the cottage-dwelling had been made snug, the marriage took place in Newburn Church on the 28th of November, 1802. George Stephenson's signature, as it stands in the register, is that of a person who seems to have just learned to write.

George Stephenson diligently set himself to study the principles of mechanics, and to master the laws by which his engine worked. For a workman, he was, even at that time, more than ordinarily speculative, often taking up strange theories, and trying to sift out the truth that was in them. While sitting by the side of his young wife in his cottage-dwelling in the winter evenings, he was usually occupied in studying mechanical subjects, or in modeling experimental machines.

Among his various speculations, he tried to discover a means of Perpetual Motion. Although he failed, as so many others had done before him, the very efforts he made tended to whet his inventive faculties, and to call forth his dormant powers. Where he had first obtained the idea of this machine—whether from conversation, or reading, or his own thoughts, is not known; but his son Robert was of opinion that he had heard of an apparatus of this kind, as described in the "History of Inventions."

Much of his spare time continued to be occupied by labor more immediately profitable. In the evenings, he would occasionally employ himself for a few hours in casting ballast out of the collier ships, by which means he was enabled to earn a few shillings weekly. Mr. William Fairbairn, of Manchester, informed the writer that, while Stephenson was employed at the Willington Ballast Hill, he himself was working in the neighborhood as an engine apprentice at the Percy Main Colliery. He was very fond of George, who was a fine, hearty fellow, besides being a capital workman. In the summer evenings young Fairbairn was accustomed to go down to Willington to see his friend, and on such occasions he would frequently take charge of George's engine for a few hours, to enable him to take a two or three hours' turn at heaving ballast out of the ship's holds. It is pleasant to think of the future President of the British Association thus helping the future Railway Engineer to earn a few extra shillings by overwork in the evenings, at a time when both occupied the rank but of humble working men in an obscure northern village.

Mr. Fairbairn was also a frequent visitor at George's cottage on the Quay, where, though there was no luxury, there was comfort, cleanliness, and a pervading spirit of industry. Even at home George was never for a moment idle. When there was no ballast to heave, he took in shoes to mend; and, from mending, he proceeded to making them, as well as shoe-lasts, in which he was admitted to be very expert. William Coe, who continued to live at Willington in 1851, informed the writer that he bought a pair of shoes from George Stephen-

son for 7*s.* 6*d.*, and he remembered that they were a capital fit, and wore very well.

But an accident occurred in Stephenson's household about this time, which had the effect of directing his industry into a new and still more profitable channel. The cottage chimney took fire one day in his absence, when the alarmed neighbors, rushing in, threw quantities of water upon the flames; and some, in their zeal, even mounted the ridge of the house, and poured buckets of water down the chimney. The fire was soon put out, but the house was thoroughly soaked. When George came home, he found the water running out of the door, every thing in disorder, and his new furniture covered with soot. The eight-day clock, which hung against the wall—one of the most highly-prized articles in the house—was seriously damaged by the steam with which the room had been filled. Its wheels were so clogged by the dust and soot, that it was brought to a complete stand-still.

George was advised to send the article to the clock-maker, but that would cost money; and he declared that he would repair it himself—at least he would try. The clock was accordingly taken to pieces and cleaned; the tools which he had been accumulating for the purpose of constructing his Perpetual Motion machine readily enabled him to do this, and he succeeded so well that, shortly after, the neighbors sent him their clocks to clean, and he soon became one of the most expert clock-cleaners in the neighborhood.

It was while living at Willington Quay that George Stephenson's only son was born on the 16th of October, 1803. The christening of the boy took place at Walsend.

After working for about three years as a brakeman at the Willington machine, George Stephenson was induced to leave his situation for a similar one at the West Moor Colliery. To this place Stephenson first came as a brakeman about the end of 1804. He had not been long in his new home ere his wife died of consumption, leaving him with his only child Robert. George deeply felt the loss, for his wife and he had been very happy together. Their lot had been sweetened by daily successful toil.

Shortly after this event he received an invitation from some gentleman concerned in large spinning-works near Montrose, in Scotland, to proceed thither and superintend the working of one of Boulton and Watt's engines. Having left his boy in charge of his housekeeper, he set out on the journey to Scotland, on foot, with his kit upon his back. At Montrose he gave proof of practical ability in contrivance. The water required for the purposes of his engine, as well as for the use of the works, was pumped from a considerable depth. The pumps frequently got choked by the sand drawn in at the bottom of the well. The barrels became worn, and the bucket and clack leathers destroyed, so that it became necessary to devise a remedy; and he proceeded to adopt this original expedient. He had a wooden box or boot made, twelve

feet high, which he placed in the well, and into this he inserted the pump. The result was that water flowed clear over into the boot, and was drawn up without admixture of sand.

During his stay in Scotland, Stephenson saved 28*l.*, which he took back with him to Killingworth, after an absence of about a year. Longing to get back to his kindred, and yearning for the boy whom he left, he trudged back to Killingworth on foot as he had gone. He related to his friend Coe, on his return, that when on the borders of Northumberland, late one evening, foot-sore and wearied with his long day's journey, he knocked at a small farmer's cottage door, and requested shelter for the night. It was refused; and then he entreated, being sore, tired, and unable to proceed any farther, they would permit him to lie down in the out-house, for that a little clean straw would serve him. The farmer's wife appeared at the door, looked at the traveler, then retiring with her husband, the two confabulated a little apart, and finally they invited Stephenson into the cottage. Always full of conversation and anecdote, he soon made himself at home in the farmer's family, and spent with them some pleasant hours. He was hospitably entertained for the night, and when he left the cottage in the morning, he pressed them to make some charge for his lodging, but they refused to accept any recompense. They only asked him to remember them kindly, and if he ever came that way, to be sure and call again. Many years after, when Stephenson had become a thriving man, he did not forget the humble pair who had thus succored and entertained him on his way; he sought their cottage again, when age had silvered their hair; and when he left the aged couple on that occasion, they may have been reminded of the old saying, that we may sometimes "entertain angels unawares."

Reaching home, Stephenson found that his father had met with a serious accident at Blucher Pit, which had reduced him to great distress and poverty; his eye-sight was irretrievably lost. The helpless and infirm man had struggled for a time with poverty; his sons who were at home, poor as himself, were little able to help him, while George was at a distance in Scotland. On his return, however, with his savings in his pocket, his first step was to pay off his father's debts, amounting to about 15*l.*; and, shortly after, he removed the aged pair to a comfortable cottage, where the old man lived for many years supported by his son.

Stephenson does not seem to have been very hopeful as to his prospects in life at the time. Indeed, the condition of the working classes was then very discouraging. England was engaged in a great war, which pressed upon the industry, and severely tried the resources of the country. There was a constant demand for men to fill the army, navy, and militia. Never before had England witnessed such drumming and fifing for recruits.

George Stephenson was one of those drawn for the militia. He

must therefore either quit his work and go a-soldiering, or find a substitute. He adopted the latter course, and borrowed 6*l.*, which, with the remainder of his savings, enabled him to provide a militiaman to serve in his stead. Thus the whole of his hard-won earnings were swept away at a stroke. He was almost in despair, and contemplated the idea of leaving the country, and emigrating to the United States. His sister Ann, with her husband, emigrated about that time, but George could not raise the requisite money. His poverty rooted him to the place where he afterward worked out his career so manfully and victoriously.

In 1808 Stephenson, with two other brakemen, took a small contract under the colliery lessees, braking the engines at the West Moor Pit. George found that the ropes which, at other pits in the neighborhood, lasted about three months, at the West Moor Pit became worn out in about a month. He set himself to ascertain the cause; and, finding it was occasioned by excessive friction, he shifted the pulley-wheels so that they worked immediately over the center of the pit. By an entire re-arrangement of the gearing of the machine, he succeeded in greatly lessening the wear and tear of the ropes, to the advantage of the owners as well as the workmen.

"In the year 1810 an atmospheric or Newcomen engine, originally made by Smeaton, was fixed at a new pit for the purpose of pumping out the water; but, somehow, the engine failed to clear the pit. The engine had been fruitlessly pumping for nearly twelve months, and came to be regarded as a total failure. Stephenson had gone to look at it when in course of erection, and then observed to the overman that he thought it was defective; he also gave it as his opinion that if there were much water in the mine, the engine could never keep it under. Of course, as he was only a brakeman, his opinion was considered to be worth very little on such a point. He continued, however, to make frequent visits to the engine to see "how she was getting on." From the bank-head where he worked his brake he could see the chimney smoking at the High Pit; and, as the workmen were passing to and from their work, he would call and inquire "if they had gotten to the bottom yet." And the reply was always to the same effect—the pumping made no progress, and the workmen were still "drowned out."

One Saturday afternoon he went over to the High Pit to examine the engine more carefully than he had yet done. He had been turning the subject over in his mind, and, after a long examination, he seemed to have satisfied himself as to the cause of the failure. Kit Heppel, one of the sinkers, asked him, "Weel, George, what do you mak' o' her? Do you think you could do any thing to improve her?" "Man," said George, in reply, "I could alter her and make her draw; in a week's time from this I could send you to the bottom."

Heppel at once reported this conversation to Ralph Dodds, the head viewer, who, being now quite in despair, and hopeless of suc-

ceeding with the engine, determined to give George's skill a trial. George had already acquired the character of a very clever and ingenious workman, and, at the worst, he could only fail, as the rest had done.

In the evening Dodds went in search of Stephenson, and met him on the road, dressed in his Sunday's suit, on his way to "the preaching" in the Methodist Chapel, which he at that time attended. "Well, George," said Dodds, "they tell me that you think you can put the engine at the High Pit to rights." "Yes, sir," said George, "I think I could." "If that's the case, I'll give you a fair trial, and you must set to work immediately. We are clean drowned out, and can not get a step farther. The engineers hereabouts are all bet; and if you really succeed in accomplishing what they can not do, you may depend upon it I will make you a man for life."

Stephenson began his operations early next morning. The only condition that he made, before setting to work, was that he should select his own workmen. There was, as he knew, a good deal of jealousy among the "regular" men that a colliery brakeman should pretend to know more about their engine than they themselves did, and attempt to remedy defects which the most skilled men of their craft, including the engineer of the colliery, had failed to do. But George made the condition a *sine quâ non*. "The workmen," said he, "must either be all Whigs or all Tories." There was no help for it, so Dodds ordered the old hands to stand aside. The men grumbled, but gave way; and then George and his party went in.

The engine was taken entirely to pieces. The cistern containing the injection water was raised ten feet; the injection cock, being too small, was enlarged to nearly double its former size, and it was so arranged that it should be shut off quickly at the beginning of the stroke. These and other alterations were necessarily performed in a rough way, but, as the result proved, on true principles. Stephenson also, finding that the boiler would bear a greater pressure than five pounds to the inch, determined to work it at a pressure of ten pounds, though this was contrary to the directions of both Newcomen and Smeaton.

The necessary alterations were made in about three days, and many persons came to see the engine start, including the men who had put her up. The pit being nearly full of water, she had little to do on starting, and, to use George's words, "came bounce into the house." Dodds exclaimed, "Why, she was better as she was; now she will knock the house down." After a short time, however, the engine got fairly to work, and by ten o'clock that night the water was lower in the pit than it had ever been before. The engine was kept pumping all Thursday, and by the Friday afternoon the pit was cleared of water, and the workmen were "sent to the bottom," as Stephenson had promised. Thus the alterations effected in the pumping apparatus proved completely successful.

Mr. Dodds was particularly gratified with the manner in which the job had been done, and he made Stephenson a present of ten pounds, which, though very inadequate when compared with the value of the work performed, was accepted with gratitude. George was proud of the gift as the first marked recognition of his skill as a workman; and he used afterward to say that it was the biggest sum of money he had, up to that time, earned in one lump. Ralph Dodds, however, did more than this; he released the brakeman from the handles of his engine at West Moor, and appointed him engine-man at the High Pit, at good wages, during the time the pit was sinking—the job lasting for about a year; and he also kept him in mind for farther advancement.

Stephenson's skill as an engine-doctor soon became noised abroad, and he was called upon to prescribe remedies for all the old, wheezy, and ineffective pumping-machines in the neighborhood. In this capacity he soon left the "regular" men far behind, though they, in their turn, were very much disposed to treat the Killingworth brakeman as no better than a quack. Nevertheless, his practice was really founded upon a close study of the principles of mechanics, and on an intimate practical acquaintance with the details of the pumping engine.

Another of his smaller achievements in the same line is still told by the people of the district. At the corner of the road leading to Long Benton there was a quarry from which a peculiar and scarce kind of ochre was taken. In the course of working it out, the water had collected in considerable quantities; and there being no means of draining it off, it accumulated to such an extent that the farther working of the ochre was almost entirely stopped. Ordinary pumps were tried, and failed; and then a windmill was tried, and failed too. On this, George was asked what ought to be done to clear the quarry of the water. He said "he would set up for them an engine, little bigger than a kail-pot, that would clear them out in a week." And he did so. A little engine was speedily erected, by means of which the quarry was pumped dry in the course of a few days. Thus his skill as a pump-doctor soon became the marvel of the district.

In elastic muscular vigor Stephenson was now in his prime, and he still continued zealous in measuring his strength and agility with his fellow-workmen. The competitive element in his nature was always strong, and his success in these feats of rivalry was certainly remarkable. Few, if any, could lift such weights, throw the hammer, and put the stone so far, or cover so great a space at a standing or running leap. One day, between the engine hour and the rope-rolling hour, Kit Heppel challenged him to leap from one high wall to another, with a deep gap between. To Heppel's surprise and dismay, George took the standing leap, and cleared the eleven feet at a bound. Had his eye been less accurate, or his limbs less agile and sure, the feat must have cost him his life.

But so full of redundant muscular vigor was he, that leaping, putting, or throwing the hammer, were not enough for him. He was also ambitious of riding on horseback; and, as he had not yet been promoted to an office enabling him to keep a horse of his own, he sometimes borrowed one of the gin-horses for a ride. On one of these occasions he brought the animal back reeking, when Tom Mitcheson, the bank horse-keeper, a rough-spoken fellow, exclaimed to him, "Set such fellows as you on horseback, and you'll soon ride to the De'il." But Tommy Mitcheson lived to tell the story, and to confess that, after all, there had been a better issue of George's horsemanship than what he had predicted.

Old Cree, the engine-wright at Killingworth High Pit, having been killed by an accident, George Stephenson was, in 1812, appointed engine-wright of the colliery at the salary of £100 a year. He was also allowed the use of a galloway to ride upon in his visits of inspection to the collieries leased by the "Grand Allies" in that neighborhood.

The "Grand Allies" were a company of gentlemen, consisting of Sir Thomas Liddell (afterward Lord Ravensworth), the Earl of Strathmore, and Mr. Stuart Wortley (afterward Lord Wharncliffe), the lessees of the Killingworth collieries. Having been informed of the merits of Stephenson, of his indefatigable industry, and the skill which he had displayed in the repairs of the pumping-engines, they readily acceeded to Mr. Dodds' recommendation that he should be appointed the colliery engine-wright; and, as we shall afterward find, they continued to honor him by distinguished marks of their approval.

THE STEPHENSONS AT KILLINGWORTH—EDUCATION AND SELF-EDUCATION OF FATHER AND SON.

George Stephenson had been diligently employed for several years in self-improvement, and experienced the usual results in increasing mental strength, capability, and skill. Every man's best success is found in the alacrity and industry with which he takes advantage of opportunities which present themselves for well-doing. He was an eminent illustration of the importance of cultivating this habit of life. Every spare moment was laid under contribution to add to his earnings or his knowledge. He missed no opportunity of observation in his own department.

He continued his attempts to solve the mystery of Perpetual Motion, and contrived several model machines with the object of embodying his ideas in a practical working shape. He afterward lamented the time lost in these futile efforts, and said if he had enjoyed the opportunities of learning from books what previous experimenters had done, he would have been spared much labor and mor-

tification. Not knowing, he groped his way by his own independent thinking and observation, when, lo! he found that his supposed invention had long been known. Often he hit upon discoveries which were but old and exploded fallacies. Yet his very struggle was of itself an education of the best sort. By wrestling with them, he strengthened his judgment, and sharpened his skill and mechanical ingenuity. Being very much in earnest, he was compelled to consider the subject of his special inquiry in all its relations, and thus he gradually acquired practical ability through his very efforts after the impracticable.

Many of his evenings were spent in the society of John Wigham. Under Andrew Robertson he had never quite mastered the Rule of Three, and it was only with Wigham that he made progress in the higher branches of arithmetic. John Wigham was of great use to his pupil in many ways. He was a good talker, fond of argument, an extensive reader, as country reading went in those days, and a very suggestive thinker. He taught him to draw plans and sections. One who remembers their evening occupation, says he "used to wonder what they meant by weighing the air and water in so odd a way." They were trying the specific gravities of objects; and the devices which they employed, the mechanical shifts to which they were put, were often of the rudest kind. In these evening entertainments the mechanical contrivances were supplied by Stephenson, while Wigham found the scientific rationale. The opportunity thus afforded to the former of cultivating his mind by contact with one wiser than himself proved of great value, and in after life Stephenson gratefully remembered the assistance which, when a humble workman, he had received from John Wigham, the farmer's son.

His leisure moments thus carefully improved, it will be inferred that Stephenson continued a sober man. Though his notions were never extreme on this point, he was systematically temperate. It appears that on the invitation of his master, Ralph Dodds,—and an invitation from a master to a workman is not easy to resist,—he had, on one or two occasions, been induced to join him in a forenoon glass of ale in the public-house of the village. But one day, about noon, when Mr. Dodds had got him as far as the public-house door, on his invitation to "come in and take a glass o' yel," Stephenson made a dead stop, and said, firmly, "No, sir, you must excuse me; I have made a resolution to drink no more at this time of day." And he went back. He desired to retain the character of a steady workman; and the instances of men about him who had made shipwreck of their character through intemperance were then, as now, unhappily too frequent.

But another consideration besides his own self-improvement had already begun to exercise an important influence upon his life. This was the training and education of his son Robert, now growing up an active, intelligent boy, as full of fun and tricks as his father had

been. When a little fellow, scarce big enough to reach so high as to put a clock-head on when placed upon the table, his father would make him mount a chair for the purpose; and to "help father" was the proudest work which the boy then, and ever after, could take part in. When the little engine was set up at the Ochre Quarry to pump it dry, Robert was scarcely absent for an hour. He watched the machine very eagerly when it was set to work, and he was very much annoyed at the fire burning away the grates. The man who fired the engine was a sort of wag, and thinking to get a laugh at the boy, he said, "Those bars are getting varra bad, Robert; I think we maun cut up some of that hard wood, and put it in instead." "What would be the use of that, you fool?" said the boy, quickly. "You would no sooner have put them in than they would be burnt out again."

So soon as Robert was of a proper age, his father sent him over to the road-side school at Long Benton; but the education was of a very limited kind, scarcely extending beyond the primer and pot-hooks.

George was still maintaining his infirm parents, and the cost of living continued excessive. But he fell back, as before, upon his old expedient of working up his spare time in the evenings at home, or during the night shifts when it was his turn to tend the engine, in mending and making shoes, cleaning clocks and watches, making shoe-lasts for the shoemakers of the neighborhood, and cutting out the pitmen's clothes for their wives; and we have been told that to this day there are clothes worn at Killingworth made after "Geordie Steevie's cut." To give his own words: "In the earlier period of my career," said he, "when Robert was a little boy, I saw how deficient I was in education, and I made up my mind that he should not labor under the same defect, but that I would put him to a good school, and give him a liberal training. I was, however, a poor man; and how do you think I managed? I betook myself to mending my neighbors' clocks and watches at nights, after my daily labor was done, and thus I procured the means of educating my son."

By dint of such extra labor in his by-hours, with this object, Stephenson contrived to save a sum of 100*l.*, which he accumulated in *guineas*, each of which he afterward sold to Jews, who went about buying up gold coins (then dearer than silver), at twenty-six shillings apiece; and he lent out the proceeds at interest. He was now, therefore, a comparatively thriving man. When he was appointed engine-wright of the colliery, Robert was sent to Mr. Bruce's school in Percy Street, Newcastle, at mid-summer, 1815, when he was about twelve years old. His father bought for him a donkey, on which he rode into Newcastle and back daily.

During the time Robert attended school at Newcastle, his father made the boy's education instrumental to his own. Robert was accustomed to spend some of his spare time at the rooms of the Literary

and Philosophical Institute, and when he went home in the evening he would recount to his father the results of his reading. Sometimes he was allowed to take with him to Killingworth a volume of the "Repertory of Arts and Sciences," which father and son studied together. But many of the most valuable works belonging to the Newcastle Library were not permitted to be removed from the rooms; these Robert was instructed to read and study, and bring away with him descriptions and sketches for his father's information. His father also practiced him in the reading of plans and drawings, without at all referring to the written descriptions. He used to observe to his son, "A good drawing or plan should always explain itself;" and, placing a drawing of an engine or machine before the youth, he would say, "There, now, describe that to me—the arrangement and the action?" Thus he taught him to read a drawing as easily as he would read a page of a book. Both father and son profited by this excellent practice, which shortly enabled them to apprehend with the greatest facility the details of even the most difficult and complicated mechanical drawing.

While Robert went on with his lessons in the evenings, his father was usually occupied with his watch and clock cleaning, or contriving models of pumping-engines, or endeavoring to embody in a tangible shape the mechanical inventions which he found described in the odd volumes on Mechanics which fell in his way. This daily and unceasing example of industry and application, working on before the boy's eyes in the person of a loving and beloved father, imprinted itself deeply upon his mind in characters never to be effaced. A spirit of self-improvement was thus early and carefully planted and fostered in him, which continued to influence his character through life; and toward the close of his career he was proud to confess that if his professional success had been great, it was mainly to the example and training of his father that he owed it.

Robert was not, however, exclusively devoted to study, but, like most boys, full of animal spirits; he was very fond of fun and play, and sometimes of mischief. Robert, like his father, was very fond of reducing his scientific reading to practice; and after studying Franklin's description of the lightning experiment, he proceeded to expend his store of Saturday pennies in purchasing about half a mile of copper wire at a brazier's shop in Newcastle. Having prepared his kite, he set it up in the field opposite his father's door, and bringing the wire, insulated by means of a few feet of silk cord, over the backs of some of Farmer Wigham's cows, he soon had them skipping about the field in all directions with their tails up. One day he had his kite flying at the cottage door as his father's galloway was hanging by the bridle to the paling, waiting for the master to mount. Bringing the end of the wire just over the pony's crupper, so smart an electric shock was given it that the brute was almost knocked down. At this juncture his father issued from the house, riding-whip in

hand, and was witness to the scientific trick just played off upon his galloway. "Ah! you mischievous scoondrel!" cried he to the boy, who ran off, himself inwardly chuckling with pride, nevertheless, at Robert's successful experiment.

At this time, and for many years after, Stephenson dwelt in a cottage standing by the side of the road leading from the West Moor Pit to Killingworth.

There was a little garden attached to the cottage, in which, while a workman, Stephenson took a pride in growing gigantic leeks and astonishing cabbages. There was great competition in the growing of vegetables among the villagers, all of whom he excelled excepting one, whose cabbages sometimes outshone his. To protect his garden-crops from the ravages of the birds, he invented a strange sort of "fley-craw," which moved its arms with the wind; and he fastened his garden door by means of a piece of ingenious mechanism, so that no one but himself could enter it. His cottage was quite a curiosity-shop of models of engines, self-acting planes, and perpetual-motion machines.

He also contrived a wonderful lamp which burned under water, with which he was afterward wont to amuse the Brandling family at Gosforth—going into the fish-pond at night, lamp in hand, attracting and catching the fish, which rushed wildly toward the flame.

Dr. Bruce tells of a competition which Stephenson had with the joiner at Killingworth as to which of them could make the best shoe-last; and when the former had done his work, either for the humor of the thing or to secure fair play from the appointed judge, he took it to the Morrisons in Newcastle, and got them to put their stamp upon it; so that it is possible the Killingworth brakeman, afterward the inventor of a safety-lamp and originator of the locomotive railway system, and John Morrison, the last-maker, afterward the translator of the Scriptures into the Chinese language, may have confronted each other in solemn contemplation of the successful last, which won the verdict coveted by its maker.

Sometimes George would endeavor to impart to his fellow-workmen the results of his scientific reading. Every thing that he learned from books was so new and so wonderful to him, that he regarded the facts he drew from them in the light of discoveries, as if they had been made but yesterday. Once he tried to explain to some of the pitmen how the earth was round, and kept turning round. But his auditors flatly declared the thing to be impossible, as it was clear that "at the bottom side they must fall off!" "Ah!" said George, "you don't quite understand it yet." His son Robert also early endeavored to communicate to others the information which he had gathered at school; and Dr. Bruce relates that, when visiting Killingworth on one occasion, he found him engaged in teaching algebra to such of the pitmen's boys as would become his pupils.

While Robert was still at school, his father proposed to him during

the holidays that he should construct a sun-dial, to be placed over their cottage door at West Moor. "I expostulated with him at first," said Robert, "that I had not learned sufficient astronomy and mathematics to enable me to make the necessary calculations. But he would have no denial. 'The thing is to be done,' said he, 'so just set about it at once.' Well, we got a 'Ferguson's Astronomy,' and studied the subject together. Many a sore head I had while making the necessary calculations to adapt the dial to the latitude of Killingworth. But at length it was fairly drawn out on paper, and then my father got a stone, and we hewed, and carved, and polished it, until we made a very respectable dial of it; and there it is, you see," pointing to it over the cottage door, "still quietly numbering the hours when the sun shines. I assure you, not a little was thought of that piece of work by the pitmen, when it was put up and began to tell its tale of time." The date carved upon the dial is "August 11th, MDCCCXVI." Both father and son were, in after-life, very proud of their joint production. Many years after, George took a party of savans, when attending the meeting of the British Association at Newcastle, over to Killingworth, to see the pits, and he did not fail to direct their attention to the sun-dial; and Robert, on the last visit which he made to the place, a short time before his death, took a friend into the cottage, and pointed out to him the very desk, still there, at which he had sat when making his calculations of the latitude of Killingworth.

From the time of his appointment as engineer at the Killingworth Pit, George Stephenson was relieved from the daily routine of manual labor, having advanced himself to the grade of a higher-class workman. Among other works of this time, he projected and laid down a self-acting incline along the declivity which fell toward the coal-loading place near Willington, where he had formerly officiated as brakeman; and so arranged it that the full wagons, descending, drew the empty wagons up the railroad. This was one of the first self-acting inclines laid down in the district.

The following is Stephenson's own account of his various duties and labors at this period of his life, as given before a Committee of the House of Commons in 1835:*

"After making some improvements in the steam-engines above ground, I was requested by the manager of the colliery to go underground along with him, to see if any improvements could be made in the mines by employing machinery as a substitute for manual labor and horse-power, in bringing the coals out of the deeper workings of the mine. On my first going down the Killingworth pit, there was a steam-engine underground for the purpose of drawing water from a pit that was sunk at some distance from the first shaft. The Killingworth coal field is considerably dislocated. After the colliery was

* Evidence given before the Select Committee on Accidents in Mines, 1835.

opened, at a very short distance from the shaft, one of those dislocations was met with. The coal was thrown down about forty yards. Considerable time was spent in sinking another pit to this depth. And on my going down to examine the work, I proposed making the engine (which had been erected some time previously) to draw the coals up an inclined plane which descended immediately from the place where it was fixed. A considerable change was accordingly made in the mode of working the colliery, not only in applying the machinery, but in employing putters instead of horses in bringing the coals from the hewers; and by those changes the number of horses in the pit was reduced from about 100 to 15 or 16. During the time I was engaged in making these important alterations, I went round the workings in the pit with the viewer almost every time that he went into the mine, not only at Killingworth, but at Mountmoor, Derwentcrook, Southmoor, all of which collieries belonged to Lord Ravensworth and his partners; and the whole of the machinery in all these collieries was put under my charge."

It will thus be observed that Stephenson had now much better opportunities for improving himself in mechanics than he had heretofore possessed. His practical knowledge of the steam-engine could not fail to prove of the greatest value to him. His shrewd insight, together with his intimate acquaintance with its mechanism, enabled him to apprehend, as if by intuition, its most abstruse and difficult combinations. The study which he had given to it when a workman, and the patient manner in which he had groped his way through all the details of the machine, gave him the power of a master in dealing with it as applied to colliery purposes.

The subject of the locomotive engine was already occupying Stephenson's careful attention, although it was still regarded in the light of a curious and costly toy, of comparatively little real use. But he had, at an early period, recognized its practical value, and formed an adequate conception of the might which as yet slumbered within it, and he now proceeded to bend the whole faculties of his mind to the development of its powers.

THE LOCOMOTIVE ENGINE—GEORGE STEPHENSON BEGINS ITS IMPROVEMENT.

The rapid increase in the coal-trade of the Tyne, about the beginning of the present century, had the effect of stimulating the ingenuity of mechanics, and encouraging them to devise improved methods of transporting the coal from the pits to the shipping-places. The railway wagons still continued to be drawn by horses. By improving and flattening the tram-way, considerable economy in horse-power had been secured; but, unless some more effective method of mechanical traction could be devised, it was clear that railway improvement had almost reached its limits.

Notwithstanding Trevithick's comparatively successful experiment with the first railway locomotive on the Merthyr Tydvil tram-road in 1804, he seems to have taken no farther steps to bring his invention into notice. He was probably discouraged by the breakage of the cast-iron plates, of which the road was formed, which were crushed under the load of his engine, and could not induce the owners of the line to relay it with better materials so as to give his locomotive a fair trial. Trevithick himself does not seem to have erected another engine, but we gather from Mr. Rastrick that, ten or twelve years before that time, he had made an engine for Trevithick after his patent, and that the engine was exhibited in London. "A circular railroad was laid down," said Mr. Rastrick, "and it was stated that this engine was to run against a horse, and that which went a sufficient number of miles was to win." It is not known what afterward became of this engine.

There were, however, at a much earlier period, several wealthy and enterprising men, both in Yorkshire and Northumberland, who were willing to give the locomotive a fair trial; and had Trevithick but possessed the requisite tenacity of purpose—had he not been too soon discouraged by partially successful experiments—he might have risen to both fame and fortune, not only as the inventor of the locomotive, but as the practical introducer of railway locomotion.

One of Trevithick's early friends and admirers was Mr. Blackett, of Wylam. The Wylam wagon-way is one of the oldest in the north of England. Down to the year 1807, it was formed of wooden spars or rails, laid down between the colliery at Wylam—where old Robert Stephenson worked—and the village of Lemington, some four miles down the Tyne, where the coals were loaded into keels or barges, and floated down past Newcastle, to be shipped for London. Each chaldron-wagon had a man in charge of it, and was originally drawn by one horse. The rate at which the wagons were hauled was so slow that only two journeys were performed by each man and horse in one day, and three on the day following. This primitive wagon-way passed, as before stated, close in front of the cottage in which George Stephenson was born, and one of the earliest sights which met his infant eyes was this wooden tram-road worked by horses.

Mr. Blackett was the first colliery owner in the North who took an active interest in the locomotive. He obtained from Trevithick, in October, 1804, a plan of his engine, provided with "friction-wheels," and employed Mr. John Whinfield, of Pipewellgate, Gateshead, to construct it at his foundry there. The engine was made under the superintendence of one John Steele, an ingenious mechanic, who had been in Wales, and worked under Trevithick in fitting the engine at Pen-y-darran. When the Gateshead locomotive was finished, a temporary way was laid down in the works, on which it was run backward and forward many times. For some reason or other, however, —it is said because the engine was too light for drawing the coal-

trains,—it never left the works, but was dismounted from the wheels, and set to blow the cupola of the foundry, in which service it long continued to be employed.

Mr. Blackett had the Wylam wooden tram-way taken up in 1808, and a plate-way of cast iron laid down instead—a single line, furnished with sidings, to enable the laden wagons to pass the empty ones. The new iron road proved so much smoother than the old wooden one, that a single horse, instead of drawing one, was enabled to draw two, or even three, laden wagons. Although the locomotive seemed about to be lost sight of, it was not forgotten. In 1811, Mr. Blenkinsop, the manager of the Middleton Collieries, near Leeds, revived the idea of employing it in lieu of horses to haul the coals along this tram-way, and in the patent which he took out for his proposed engine, followed in many respects the design of Trevithick; but, with the help of Matthew Murray, of Leeds, one of the most ingenious mechanics of his day, he introduced several important and valuable modifications.

The principal new features in this engine were the two cylinders and the toothed-wheel working into a rack-rail. Mr. Blenkinsop contrived the latter expedient in order to insure sufficient adhesion between the wheel and the road, supposing that smooth wheels and smooth rails would be insufficient for the purpose. Clumsy and slow though the engine was, compared with modern locomotives, it was nevertheless a success. It was the first engine that plied regularly upon any railway, doing useful work; and it continued so employed for more than twenty years. What was more, it was a commercial success, for its employment was found to be economical compared with horse power. In a letter to Sir John Sinclair, Mr. Blenkinsop stated that his engine weighed five tons; consumed two-thirds of a hundred weight of coals and fifty gallons of water per hour; drew twenty-seven wagons, weighing ninety-four tons, on a dead level, at three and a half miles an hour, or fifteen tons up an ascent of two inches in the yard; that when "lightly loaded" it traveled at a speed of ten miles an hour; that it did the work of sixteen horses in twelve hours; and that its cost was 400*l*. Such was Mr. Blenkinsop's own account of the performances of his engine, which was for a long time regarded as one of the wonders of the neighborhood.

The Messrs. Chapman, of Newcastle, in 1812, endeavored to overcome the same fictitious difficulty of the want of adhension between the wheel and the rail by patenting a locomotive to work along the road by means of a chain stretched from one end of it to the other. This chain was passed once round a grooved barrel-wheel under the center of the engine, so that when the wheel turned, the locomotive, as it were, dragged itself along the railway. An engine constructed after this plan was tried on the Heaton Railway, near Newcastle; but it was so clumsy in action, there was so great a loss of power by friction, and it was found to be so expensive and difficult to keep in

repair, that it was very soon abandoned. Another remarkable expedient was adopted by Mr. Brunton, of the Butterley Works, Derbyshire, who in 1813 patented his Mechanical Traveler, to go *upon legs* working alternately like those of a horse. But this engine never got beyond the experimental state, for, at its very first trial, the driver, to make sure of a good start, overloaded the safety-valve, when the boiler burst and killed a number of the by-standers, wounding many more. These, and other contrivances with the same object, projected about the same time, show that invention was busily at work, and that many minds were anxiously laboring to solve the problem of steam locomotion on railways.

Mr. Blackett, of Wylam, was encouraged by the success of Mr. Blenkinsop's experiment, and again he resolved to make a trial of the locomotive upon his wagon-way. Accordingly, in 1812, he ordered a second engine, which was so designed as to work with a toothed driving-wheel upon a rack-rail, as at Leeds. Notwithstanding, however, the comparative failure of the second locomotive, Mr. Blackett persevered with his experiments. One of the chief causes of failure being the rack-rail, the idea occurred to Mr. Hedley, that it might be possible to secure sufficient adhesion between the wheel and the rail by the mere weight of the engine, and he proceeded to make a series of experiments for the purpose of determining this problem. Having found the proportion which the power bore to the weight, he demonstrated by successive experiments that the weight of the engine would of itself produce sufficient adhesion to enable it to draw upon a smooth railroad the requisite number of wagons in all kinds of weather. And thus was the fallacy which had heretofore prevailed on this subject exploded, and it was satisfactorily proved that rack-rails, toothed wheels, endless chains, and legs, were alike unnecessary for the efficient traction of loaded wagons upon a moderately level road.

From this time forward, considerably less difficulty was experienced in working the coal-trains upon the Wylam tram-road. At length the rack-rail was dispensed with. The road was laid with heavier rails; the working of the old engine was improved; and a new engine was shortly after built and placed upon the road, still on eight wheels.

While Mr. Blackett was experimenting and building locomotives at Wylam, George Stephenson was anxiously studying the same subject at Killingworth.

In the first place, Stephenson resolved to make himself thoroughly acquainted with what had already been done. Mr. Blackett's engines were working daily at Wylam, past the cottage where he had been born, and thither he frequently went to inspect the improvements made by Mr. Blackett from time to time both in the locomotive and in the plate-way along which it worked.

An efficient and economical working locomotive engine still remained to be invented, and to accomplish this object Stephenson now applied himself. Profiting by what his predecessors had done, warned by

their failures and encouraged by their partial successes, he commenced his labors. There was still wanting the man who should accomplish for the locomotive what James Watt had done for the steam-engine, and combine in a complete form the best points in the separate plans of others, embodying with them such original inventions and adaptations of his own as to entitle him to the merit of inventing the working locomotive, as James Watt is to be regarded as the inventor of the working condensing engine. This was the great work upon which George Stephenson now entered, though probably without any adequate idea of the ultimate importance of his labors to society and civilization.

He proceeded to bring the subject of constructing a "Traveling Engine," as he then denominated the locomotive, under the notice of the lessees of the Killingworth Colliery, in the year 1813. Lord Ravensworth, the principal partner, had already formed a very favorable opinion of the new colliery engine-wright; and, after considering the matter, and hearing Stephenson's explanations, he authorized him to proceed with the construction of a locomotive.

Stephenson was under the necessity of working with such men and tools as were at his command, and he had in a great measure to train and instruct the workmen himself. The engine was built in the workshops at the West Moor, the leading mechanic being John Thirlwall, the colliery blacksmith, an excellent mechanic in his way, though quite new to the work now intrusted to him.

In this first locomotive, Stephenson, to some extent, followed the plan of Blenkinsop's engine. The wheels of the locomotive were all smooth, Stephenson having satisfied himself by experiment that the adhesion between the wheels of a loaded engine and the rail would be sufficient for the purpose of traction.

The engine was, after much labor and anxiety, and frequent alterations of parts, at length brought to completion, having been about ten months in hand. It was placed upon the Killingworth Railway on the 25th of July, 1814, and its powers were tried on the same day. On an ascending gradient of 1 in 450, the engine succeeded in drawing after it eight loaded carriages of thirty tons' weight at about four miles an hour; and, for some time after, it continued regularly at work.

Although a considerable advance upon previous locomotives, "Blucher" (as the engine was popularly called) was nevertheless a somewhat cumbrous and clumsy machine. The parts were huddled together. The boiler constituted the principal feature; and, being the foundation of the other parts, it was made to do duty not only as a generator of steam, but also as a basis for the fixings of the machinery and for the bearings of the wheels and axles. The want of springs was seriously felt; and the progress of the engine was a succession of jolts, causing considerable derangement to the machinery. The mode of communicating the motive power to the wheels by means of the spur-gear also caused frequent jerks, each cylinder alternately propel-

ling or becoming propelled by the other, as the pressure of the one upon the wheels became greater or less than the pressure of the other; and, when the teeth of the cog-wheels became at all worn, a rattling noise was produced during the traveling of the engine.

As the principal test of the success of the locomotive was its economy as compared with horse-power, careful calculations were made with the view of ascertaining this important point. The result was, that it was found the working of the engine was at first barely economical; and at the end of the year the steam-power and the horse-power were ascertained to be as nearly as possible upon a par in point of cost.

Robert says: "Thus, in 1815, my father had succeeded in manufacturing an engine which included the following important improvements on all previous attempts in the same direction: simple and direct communication between the cylinder and the wheels rolling upon the rails; joint adhesion of all the wheels, attained by the use of horizontal connecting-rods; and, finally, a beautiful method of exciting the combustion of fuel by employing the waste steam which had formerly been allowed uselessly to escape. It is, perhaps, not too much to say that this engine, as a mechanical contrivance, contained the germ of all that has since been effected. It may be regarded, in fact, as a type of the present locomotive engine.

"In describing my father's application of the waste steam for the purpose of increasing the intensity of combustion in the boiler, and thus increasing the power of the engine without adding to its weight, and while claiming for this engine the merit of being a type of all those which have been successfully devised since the commencement of the Liverpool and Manchester Railway, it is necessary to observe that the next great improvement in the same direction, the 'multitubular boiler,' which took place some years later, could never have been used without the help of that simple expedient, *the steam-blast*, by which power only the burning of coke was rendered possible.

"I can not pass over this last-named invention of my father's without remarking how slightly, as an original idea, it has been appreciated; and yet how small would be the comparative value of the locomotive engine of the present day without the application of that important invention!

"Engines constructed by my father in the year 1818, upon the principles just described, are in use on the Killingworth Colliery Railway to this very day (1856), conveying, at the speed of perhaps five or six miles an hour, heavy coal-trains, probably as economically as any of the more perfect engines now in use.

"There was another remarkable piece of ingenuity in this machine, which was completed so many years before the possibility of steam locomotion became an object of general commercial interest and Parliamentary inquiry. I have before observed that up to and after the year 1818 there was no such class of skilled mechanics, nor were

there such machinery and tools for working in metals, as are now at the disposal of inventors and manufacturers. Among other difficulties of a similar character, it was not possible at that time to construct springs of sufficient strength to support the improved engines. The rails then used being extremely light, the roads became worn down by the traffic, and occasionally the whole weight of the engine, instead of being uniformly distributed over four wheels, was thrown almost diagonally upon two. In order to avoid the danger arising from such irregularities in the road, my father arranged the boiler so that it was supported upon the frame of the engine by four cylinders which opened into the interior of the boiler. These cylinders were occupied by pistons with rods, which passed downward and pressed upon the upper side of the axles. The cylinders, opening into the interior of the boiler, allowed the pressure of steam to be applied to the upper side of the piston, and that pressure being nearly equal to the support of one-fourth of the weight of the engine, each axle, whatever might be its position, had the same amount of weight to bear, and consequently the entire weight was at all times nearly equally distributed among the wheels. This expedient was more necessary in this case, as the weight of the new locomotive engines far exceeded that of the carriages which had hitherto been used upon colliery railways, and therefore subjected the rails to much greater risk from breakage. And this mode of supporting the engine remained in use until the progress of spring-making had considerably advanced, when steel springs of sufficient strength superseded this highly ingenious mode of distributing the weight of the engine uniformly among the wheels."

The invention of the Steam-blast by George Stephenson, in 1815, was fraught with the most important consequences to railway locomotion, and it is not saying too much to aver that the success of the locomotive has been in a great measure the result of its adoption. Without the steam-blast, by means of which the intensity of combustion is maintained at its highest point, producing a correspondingly rapid evolution of steam, high rates of speed could not have been kept up; the advantages of the multitubular boiler (afterward invented) could never have been fully tested, and locomotives might still have been dragging themselves unwieldily along at little more than five or six miles an hour.

The following passage from Mr. Wood's "Practical Treatise on Railroads" clearly describes the express object and purpose for which George Stephenson invented and applied the steam-blast in the Killingworth engines. Describing their action, Mr. Wood says:

"The steam is admitted to the top and bottom of the piston by means of a sliding valve, which, being moved up and down alternately, opens a communication between the top and bottom of the cylinder and the pipe that is *open into the chimney, and turns up within it.* The steam, after performing its office within the cylinder, is thus thrown

into the chimney, and the power with which it issues will be proportionate to the degree of elasticity; and *the exit being directed upward, accelerates the velocity of the current of heated air accordingly.*"

It was only when the improved passenger engine, fitted with the multitubular boiler, was required to run at high speed that the full merits of the blast were brought out; and in detecting its essential uses in this respect, and sharpening it for the purpose of increasing its action, the sagacity of Timothy Hackworth, of Darlington, is entitled to due recognition.

Our purpose in this sketch is not to present a full life of George Stephenson, but simply to bring before our readers the history of his early life, to follow him in his sturdy endeavors to overcome the difficulties which encompassed his path, and gather the best lessons of his career for the encouragement of others who may yet strive to "win their way in the world"—and more especially to trace his own and his son Robert's connection with developing and perfecting the railway locomotive; we therefore omit references to many items of interest, his "Miners' Safety Lamp," and other inventions and improvements. Our narrative is abridged from the large and handsomely illustrated volume of Samuel Smiles,* which may be read with profit.

In 1819, the owners of the Hetton Colliery, in the county of Durham, determined to have their wagon-way altered to a locomotive railroad. The result of the working of the Killingworth Railway had been so satisfactory that they resolved to adopt the same system. The Hetton Coal Company, possessed of adequate means, invited Stephenson to act as the engineer of the proposed railway. Stephenson accepted the appointment, his brother Robert acting as resident engineer and personally superintending the execution of the works.

Although George Stephenson had, with every step made toward its increased utility, become more and more identified with the success of the locomotive engine, he did not allow his enthusiasm to carry him away into costly mistakes. He carefully drew the line between the cases in which the locomotive could be usefully employed and those in which stationary engines were calculated to be more economical.

On the original Hetton line there were five self-acting inclines—the full wagons drawing the empty ones up—and two inclines worked by fixed reciprocating engines of sixty-horse power each. The locomotive traveling engine, or "the iron horse," as the people of the neighborhood then styled it, worked the rest of the line. On the day of the opening of the Hetton Railway, the 18th of November, 1822, crowds of spectators assembled from all parts to witness the first operations of this ingenious and powerful machinery, which was entirely successful. On that day five of Stephenson's locomotives were at work upon the railway, under the direction of his brother Robert; and the first shipment of coal was then made by the Hetton

*"The Life of George Stephenson and of his son Robert Stephenson."

Company at their new staiths on the Wear. The speed at which the locomotives traveled was about four miles an hour, and each engine dragged after it a train of seventeen wagons weighing about sixty-four tons.

While thus advancing step by step—attending to the business of the Killingworth Colliery, and laying out railways in the neighborhood—he was carefully watching over the education of his son. We have already seen that Robert was sent to school at Newcastle, where he remained about four years. While Robert was at school, his father, as usual, made his son's education instrumental to his own. He entered him a member of the Newcastle Literary and Philosophical Institute, the subscription to which was three guineas a year. Robert spent much of his leisure hours there, reading and studying; and when he went home in the afternoons, he was accustomed to carry home with him a volume of the "Repertory of Arts and Sciences," or of some work on practical science, which furnished the subject of interesting reading and discussion in the evening hours. Both father and son were always ready to acknowledge the great advantages they had derived from the use of so excellent a library of books; and, toward the close of his life, the latter, in recognition of his debt of gratitude to the institution, contributed a large sum for the purpose of clearing off the debt, but conditional on the annual subscription being reduced to a guinea, in order that the usefulness of the Institute might be extended.

Robert left school in the summer of 1819, and was put apprentice to Mr. Nicholas Wood, the head viewer at Killingworth, to learn the business of the colliery. He served in that capacity for about three years, during which time he became familiar with most departments of under-ground work. His occupation was not unattended with peril, as the following incident will show: Though the use of the Geordy lamp had become general in the Killingworth pits, and the workmen were bound, under penalty of half a crown, not to use a naked candle, it was difficult to enforce the rule, and even the masters themselves occasionally broke it. One day Nicholas Wood, the head viewer; Moodie, the under viewer, and Robert Stephenson, were proceeding along one of the galleries, Wood with a naked candle in his hand, and Robert following him with a lamp. They came to a place where a fall of stones from the roof had taken place, on which Wood, who was first, proceeded to clamber over the stones, holding high the naked candle. He had nearly reached the summit of the heap, when the fire-damp, which had accumulated in the hollow of the roof, exploded, and instantly the whole party were blown down, and the lights extinguished. They were a mile from the shaft, and quite in the dark. There was a rush of the work-people from all quarters toward the shaft, for it was feared that the fire might extend to more dangerous parts of the pit, where, if the gas had exploded, every soul in the mine must inevitably have perished. Robert Stephenson and

Moodie, on the first impulse, ran back at full speed along the gallery leading to the shaft, coming into collision, on their way, with the hind quarters of a horse stunned by the explosion. When they had gone half way, Moodie halted, and bethought him of Nicholas Wood. "Stop, laddie!" said he to Robert, "stop; we maun gang back and seek the maister." So they retraced their steps. Happily, no farther explosion took place. They found the master lying on the heap of stones, stunned and bruised, with his hands severely burnt. They led him to the bottom of the shaft; and he afterward took care not to venture into the dangerous parts of the mine without the protection of a Geordy lamp. (George Stephenson's improved lamp for mines.)

The time that Robert spent at Killingworth as viewer's apprentice was of advantage both to his father and himself. The evenings were generally devoted to reading and study, the two from this time working together as friends and co-laborers. One who used to drop in at the cottage of an evening well remembers the animated and eager discussions which on some occasions took place, more especially with reference to the growing powers of the locomotive engine. The son was even more enthusiastic than his father on the subject. Robert would suggest numerous alterations and improvements in detail. His father, on the contrary, would offer every possible objection, defending the existing arrangements—proud, nevertheless, of his son's suggestions, and often warmed and excited by his brilliant anticipations of the ultimate triumph of the locomotive.

These discussions probably had considerable influence in inducing Stephenson to take the next important step in the education of his son. Although Robert, who was only nineteen years of age, was doing well, and was certain, at the expiration of his apprenticeship, to rise to a higher position, his father was not satisfied with the amount of instruction which he had as yet given him. Remembering the disadvantages under which he had himself labored, through his ignorance of practical chemistry during his investigations connected with the safety-lamp, more especially with reference to the properties of gas, as well as in the course of his experiments with the object of improving the locomotive engine, he determined to furnish his son with a better scientific culture than he had yet attained. He also believed that a proper training in technical science was indispensable to success in the higher walks of the engineer's profession, and he determined to give Robert the education, in a certain degree, which he so much desired for himself. He would thus, he knew, secure an able co-worker in the elaboration of the great ideas now looming before him and with their united practical and scientific knowledge he probably felt that they would be equal to any enterprise.

He accordingly took Robert from his labors as under viewer in the West Moor Pit, and in October, 1822, sent him for a short course of instruction to the Edinburgh University. Robert was furnished

with letters of introduction to several men of literary eminence in Edinburgh, his father's reputation in connection with the safety-lamp being of service to him in this respect.

One of the practical sciences in the study of which Robert Stephenson took special interest while at Edinburgh was that of Geology. The situation of a city, in the midst of a district of highly interesting geological formation, easily accessible to pedestrians, is indeed most favorable to the pursuit of such a study; and it was the practice of Professor Jameson frequently to head a band of his pupils, armed with hammers, chisels, and clinometers, and take them with him on a long ramble into the country, for the purpose of teaching them habits of observation, and reading to them from the open book of Nature itself.

Toward the end of the summer the young student returned to Killingworth to re-enter upon the active business of life. The six months' study had cost his father 80*l.*—a considerable sum to him in those days; but he was amply repaid by the additional scientific culture which his son had acquired, and the evidence of ability and industry which he was enabled to exhibit in a prize for mathematics which he had won at the University.

We may here add that by this time George Stephenson, after remaining a widower fourteen years, had married, in 1820, his second wife, Elizabeth Hindmarsh, the daughter of a respectable farmer at Black Callerton. She was a woman of excellent character, sensible, and intelligent, and of a kindly and affectionate nature. George's son Robert, whom she loved as if he had been her own, to the last day of his life spoke of her in the highest terms; and it is unquestionable that she contributed in no small degree to the happiness of her husband's home.

GEORGE STEPHENSON ENGINEER OF THE STOCKTON AND DARLINGTON RAILWAY.

It is not improbable that the slow progress made by railways in public estimation was, in a considerable measure, due to the comparative want of success which had attended the first projects. We do not refer to the tram-roads and railroads which connected the collieries and iron-works with the shipping-places. These were found convenient and economical, and their use became general in Durham and Northumberland, in South Wales, in Scotland, and throughout the colliery districts. But none of these were public railways. Though the Merthyr Tydvil Tram-road, the Sirhoway Railroad, and others in South Wales, were constructed under the powers of special acts, they were exclusively used for the private purposes of the coal-owners and iron-masters at whose expense they were made.

The first *public* Railway Act was that passed in 1801, authorizing the construction of "The Surrey Iron Railway." By a subsequent

act, powers were obtained to extend the line to Reigate, with a branch to Godstone. The object of this railway was to furnish a more ready means for the transport of coal and merchandise from the Thames to the districts of South London, and at the same time to enable the lime-burners and proprietors of stone-quarries to send the lime and stone to London. With this object, the railroad was connected with a dock or basin in Wandsworth Creek capable of containing thirty barges, with an entrance lock into the Thames.

The works had scarcely been commenced ere the company got into difficulties, but eventually 26 miles of iron-way were constructed and opened for traffic. Any person was then at liberty to put wagons on the line, and to carry goods within the prescribed rates, the wagons being worked by horses, mules, and donkeys. Notwithstanding the very sanguine expectations which were early formed as to the paying qualities of this railway, it never realized any adequate profit to the owners. But it continued to be worked, principally by donkeys for the sake of cheapness, down to the passing of the act for constructing the London and Brighton line in 1837, when the proprietors disposed of it to the new company. The line was dismantled; the stone blocks and rails were taken up and sold; and all that remains is the track still observable to the south of Croydon, and an occasional cutting and embankment, which still mark the route of this first public railway. There was, as yet, no general recognition of the advantages either of railways or locomotives.

The ill success of railways was generally recognized. Nearly twenty years passed between the construction of the first and the second public railway in England; and this brings us to the projection of the Stockton and Darlington, the parent public locomotive railway in the kingdom.

The district lying to the west of Darlington, in the county of Durham, is one of the richest mineral fields of the North. Vast stores of coal underlie the valley, and from an early period it was an exceedingly desirable object to open up new communications to market. But the district lay a long way from the sea, and the Tees being unnavigable, there was next to no vend for the Bishop Aukcland coal.

It is easy to understand, therefore, how the desire to obtain an outlet for this coal should have early occupied the attention of the coal-owners. The first idea that found favor was the construction of a canal. About a century ago, in 1766, shortly after the Duke of Bridgewater's Canal had been opened to Manchester, a movement was set on foot at Darlington to have the country surveyed to Stockton.

In October, 1768, Whitworth presented his plan of the proposed canal from Stockton by Darlington to Winston, and in the following year Brindley concurred with him in a joint report.

When it became known that some engineering scheme was afoot at Stockton, Ralph Dodd, the first projector of a tunnel under the

Thames, and the first to bring a steam-boat from Glasgow into the Thames, addressed the Corporation of Stockton in 1796 on the propriety of forming a line of internal navigation by Darlington and Staindrop to Winston. Still nothing was done.

The public head is usually very thick, and it is difficult to hammer a new idea into it. Canals were established methods of conveyance, and were every-where recognized; whereas railways were new things, and were struggling hard to gain a footing. Besides, the only public railway in England, the Croydon and Merstham, had proved a commercial failure, and was held up as a warning to all speculators on tram-ways. But, though the Newcastle meeting approved of a canal in preference to a railway from the Tyne to the Solway, nothing was really done to promote the formation of either.

In May, 1818, the movement in favor of a canal was again revived at Stockton. In September, 1818, Mr. Overton, who had laid down several coal railways in Wales, was consulted, and, after surveying the district, sent in his report. Mr. Rennie also was consulted. Both engineers gave their opinion in favor of a railway, "whether taken as a line for the exportation of coal or as one for a local trade." The committee reported in favor of the railway.

A survey of the line was then ordered, and steps were taken to apply to Parliament for the necessary powers to construct the railway. But the controversy was not yet at an end. Stockton stood by its favorite project of a canal, and would not subscribe a farthing toward the projected railway; but neither did it subscribe toward the canal. The landlords, the road trustees, the carriers, the proprietors of donkeys (by whom coals were principally carried for inland sale), were strenuously opposed to the new project; while the general public, stupid and skeptical, for the most part stood aloof, quoting old saws and keeping their money in their pockets.

Several energetic men, however, were now at the head of the railway project, and determined to persevere with it. Among these, the Peases were the most zealous. Edward Pease might be regarded as the back-bone of the concern. Opposition did not daunt him, nor failure discourage him. When apparently overthrown and prostrate, he would rise again stronger than before, and renew his efforts with increased vigor. He had in him the energy and perseverance of many men. One who knew him in 1818 said, "He was a man who could see a hundred years ahead." In his eighty-eighth year, in 1854, a few years before his death, he still possessed the hopefulness and mental vigor of a man in his prime. Still sound in health, his eye had not lost its brilliancy, nor his cheek its color, and there was an elasticity in his step which younger men might have envied.

The Richardsons and Backhouses, members, like himself, of the Society of Friends, influenced by his persuasion, united themselves with him; and so many of the same denomination (having confidence in these influential Darlington names) followed their example and sub-

scribed for shares, that the railway obtained the designation, which it long retained, of "The Quakers' Line."

The Stockton and Darlington scheme had to run the gauntlet of a fierce opposition in three successive sessions of Parliament. The application of 1818 was defeated by the Duke of Cleveland, who afterward profited so largely by the railway.

Some time elapsed before any active steps were taken to proceed with the construction of the railway. Doubts were raised whether the line was the best that could be adopted for the district, and the subscribers generally were not so sanguine about the undertaking as to induce them to press it forward.

One day, about the end of the year 1821, two strangers knocked at the door of Mr. Pease's house in Darlington, and a message was brought to him that some persons from Killingworth wanted to speak with him. They were invited in, on which one of the visitors introduced himself as Nicholas Wood, viewer at Killingworth, and then turning to his companion, he introduced him as George Stephenson, engine-wright, of the same place.

Mr. Pease entered into conversation with his visitors, and was soon told their object. Stephenson had heard of the passing of the Stockton and Darlington Act, and desiring to increase his railway experience, and also to employ in some larger field the practical knowledge he had already acquired, he determined to visit the known projector of the undertaking, with the view of being employed to carry it out. He had brought with him his friend Wood for the purpose at the same time of relieving his diffidence and supporting his application.

Mr. Pease liked the appearance of his visitor: "There was," as he afterward remarked, when speaking of Stephenson, "such an honest, sensible look about him, and he seemed so modest and unpretending. He spoke in the strong Northumbrian dialect of his district, and described himself as 'only the engine-wright at Killingworth; that's what he was.'"

Mr. Pease soon saw that our engineer was the very man for his purpose. The whole plans of the railway were still in an undetermined state, and Mr. Pease was therefore glad to have the opportunity of profiting by Stephenson's experience. In the course of their conversation, the latter strongly recommended a *railway* in preference to a tram-road. They also discussed the kind of tractive power to be employed, Mr. Pease stating that the company had based their whole calculations on the employment of *horse*-power. "I was so satisfied," said he afterward, "that a horse upon an iron road would draw ten tons for one ton on a common road, that I felt sure that before long the railway would become the king's highway."

But Mr. Pease was scarcely prepared for the bold assertion made by his visitor, that the locomotive engine with which he had been working the Killingworth Railway for many years past was worth fifty horses, and that engines made after a similar plan would yet entirely

supersede all horse-power upon railroads. Stephenson was daily becoming more positive as to the superiority of his locomotive, and hence he strongly urged Mr. Pease to adopt it. "Come over to Killingworth," said he, "and see what my engines can do; seeing is believing, sir." Mr. Pease accordingly promised that on some early day he would go over to Killingworth, and take a look at the wonderful machine that was to supersede horses.

The result of the interview was, that Mr. Pease promised to bring Stephenson's application for the appointment of engineer before the directors, and to support it with his influence; whereon the two visitors prepared to take their leave, informing Mr. Pease that they intended to return to Newcastle "by nip;" that is, they expected to get a smuggled lift on the stage-coach by tipping Jehu—for in those days the stage coachmen regarded all casual roadside passengers as their proper perquisites. They had, however, been so much engrossed by their conversation that the lapse of time was forgotten, and when Stephenson and his friend made inquiries about the return coach, they found the last had left, and they had to walk eighteen miles to Durham on their way back to Newcastle.

Mr. Pease having made farther inquiries respecting Stephenson's character and qualifications, and having received a very strong recommendation of him as the right man for the intended work, he brought the subject of his application before the directors of the Stockton and Darlington Company. They resolved to adopt his recommendation, that a railway be formed instead of a tram-road; and they farther requested Mr. Pease to write to Stephenson, desiring him to undertake a re-survey of the line at the earliest practicable period.

A man was dispatched on a horse with the letter, and when he reached Killingworth he made diligent inquiry after the person named on the address, "George Stephenson, Esquire, Engineer." No such person was known in the village. It is said that the man was on the point of giving up all farther search, when the happy thought struck some of the colliers' wives who had gathered about him that it must be "Geordie the engine-wright," the man was in search of, and to Geordie's cottage he accordingly went, found him at home, and delivered the letter.

About the end of September, Stephenson went carefully over the line of the proposed railway for the purpose of suggesting such improvements and deviations as he might consider desirable. He was accompanied by an assistant and a chainman, his son Robert entering the figures while his father took the sights. After being engaged in the work at intervals for about six weeks, Stephenson reported the result of his survey to the Board of Directors, and showed that, by certain deviations, a line shorter by about three miles might be constructed at a considerable saving in expense, while at the same time more favorable gradients—an important consideration—would be secured.

It was, however, determined in the first place to proceed with the works at those parts of the line where no deviation was proposed, and the first rail of the Stockton and Darlington Railway was laid with considerable ceremony, near Stockton, on the 23d of May, 1822.

It is worthy of note that Stephenson, in making his first estimate of the cost of forming the railway according to the instructions of the directors, set down, as part of the cost, 6,200*l.* for stationary engines, not mentioning locomotives at all. It was the intention of the directors, in the first place, to employ only horses for the haulage of the coals, and fixed engines and ropes where horse-power was not applicable. The whole question of steam-locomotive power was, in the estimation of the public, as well as of practical and scientific men, as yet in doubt. The confident anticipations of George Stephenson as to the eventual success of locomotive engines were regarded as mere speculations; and when he gave utterance to his views, as he frequently took the opportunity of doing, it even had the effect of shaking the confidence of some of his friends in the solidity of his judgment and his practical qualities as an engineer.

When Mr. Pease discussed the question with Stephenson, his remark was, "Come over and see my engines at Killingworth, and satisfy yourself as to the efficiency of the locomotive. I will show you the colliery books, that you may ascertain for yourself the actual cost of working. And I must tell you that the economy of the locomotive engine is no longer a matter of theory, but a matter of fact." So confident was the tone in which Stephenson spoke of the success of his engines, and so important were the consequences involved in arriving at a correct conclusion on the subject, that Mr. Pease at length resolved on paying a visit to Killingworth in the summer of 1822, in company with his friend Thomas Richardson, a considerable subscriber to the Stockton and Darlington undertaking, to inspect the wonderful new power so much vaunted by their engineer.

When Mr. Pease arrived at Killingworth village, he inquired for George Stephenson, and was told that he must go over to the West Moor, and seek for a cottage by the roadside with a dial over the door—"that was where George Stephenson lived." They soon found the house with the dial, and, on knocking, the door was opened by Mrs. Stephenson. In answer to Mr. Pease's inquiry for her husband, she said he was not in the house at present, but that she would send for him to the colliery. And in a short time Stephenson appeared before them in his working dress, just as he had come out of the pit.

He very soon had his locomotive brought up to the crossing close by the end of the cottage, made the gentleman mount it, and showed them its paces. Harnessing it to a train of loaded wagons, he ran it along the railroad, and so thoroughly satisfied his visitors of its power and capabilities, that from that day Edward Pease was a declared supporter of the locomotive engine. In preparing the Amended Stockton and Darlington Act, at Stephenson's urgent request, Mr.

Pease had a clause inserted, taking power to work the railway by means of locomotive engines, and to employ them for hauling passengers as well as merchandise.* The act was obtained in 1823, on which Stephenson was appointed the company's engineer, at a salary of 300*l.* per annum; and it was determined that the line should be constructed and opened for traffic as soon as practicable.

He at once proceeded, accompanied by his assistants, with the working survey of the line, laying out every foot of the ground himself. Railway surveying was as yet in its infancy, and was slow and difficult work. It afterward became a separate branch of railway business, and was intrusted to a special staff. Indeed, on no subsequent line did George Stephenson take the sights through the spirit-level with his own hands and eyes as he did on this railway. He started very early—dressed in a blue-tailed coat, breeches, and top-boots—and surveyed until dusk. He was not at any time particular as to his living; and, during the survey, he took his chance of getting a little milk and bread at some cottager's house along the line, or occasionally joined in a homely dinner at some neighboring farm-house. The country people were accustomed to give him a hearty welcome when he appeared at their door, for he was always full of cheery and homely talk, and, when there were children about the house, he had plenty of humorous chat for them as well as for their seniors.

After the day's work was over, George would drop in at Mr. Pease's to talk over the progress of the survey, and discuss various matters connected with the railway. Mr. Pease's daughters were usually present; and, on one occasion, finding the young ladies learning the art of embroidery, he volunteered to instruct them. This incident, communicated by the late Edward Pease, has since been made the subject of a fine picture by Mr. A. Rankley, A.R.A., exhibited at the Royal Academy Exhibition of 1861. "I know all about it," said he, "and you will wonder how I learned it. I will tell you. When I was a brakeman at Killingworth, I learned the art of embroidery while working the pitmen's button-holes by the engine fire at nights." He was never ashamed, but, on the contrary, rather proud, of reminding his friends of these humble pursuits of his early life. Mr. Pease's family were greatly pleased with his conversation, which was always amusing and instructive; full of all sorts of experience, gathered in the oddest and most out-of-the-way places. Even at that early period, before he mixed in the society of educated persons, there was a dash of speculativeness in his remarks which gave a high degree of originality to his conversation; and he would sometimes, in a casual remark, throw a flash of light upon a subject which called up a train of pregnant suggestions.

* The first clause in any railway act empowering the employment of locomotive engines for the working of passenger traffic.

One of the most important subjects of discussion at these meetings with Mr. Pease was the establishment of a manufactory at Newcastle, for the building of locomotive engines. Up to this time all the locomotives constructed after Stephenson's designs had been made by ordinary mechanics working at the collieries in the North of England. But he had long felt that the accuracy and style of their workmanship admitted of great improvement, and that upon this the more perfect action of the locomotive engine, and its general adoption, in a great measure depended. One principal object that he had in view in establishing the proposed factory was to concentrate a number of good workmen for the purpose of carrying out the improvements in detail which he was from time to time making in his engine; for he felt hampered by the want of efficient help from skilled mechanics, who could work out in a practical form the ideas of which his busy mind was always so prolific. Doubtless, too, he believed that the manufactory would prove a remunerative investment, and that, on the general adoption of the railway system which he anticipated, he would derive solid advantages from the fact of his establishment being the only one of the kind for the special construction of locomotive engines.

Mr. Pease approved of his design, and strongly recommended him to carry it into effect. But there was the question of means; and Stephenson did not think he had capital enough for the purpose. He told Mr. Pease that he could advance 1000*l.*—the amount of the testimonial presented by the coal-owners for his safety-lamp invention, which he had still left untouched; but he did not think this sufficient for the purpose, and he thought that he should require at least another 1000*l.* Mr. Pease had been very much struck with the successful performances of the Killingworth engine; and, being an accurate judge of character, he believed that he could not go far wrong in linking a portion of his fortune with the energy and industry of George Stephenson. He consulted his friend Thomas Richardson in the matter, and the two consented to advance 500*l.* each for the purpose of establishing the engine factory at Newcastle. A piece of land was accordingly purchased in Forth Street, in August, 1823, on which a small building was erected—the nucleus of the gigantic establishment which was afterward formed around it; and active operations were begun early in 1824.

While the Stockton and Darlington Railway works were in progress, our engineer had many interesting discussions with Mr. Pease on points connected with its construction and working, the determination of which in a great measure affected the formation and working of future railways. The most important points were these: 1. The comparative merits of cast and wrought iron rails. 2. The gauge of the railway. 3. The employment of horse or engine power in working it when ready for traffic.

The kind of rails to be laid down to form the permanent road

was a matter of considerable importance. A wooden tram-road had been contemplated when the first act was applied for; but Stephenson having advised that an iron road should be laid down, he was instructed to draw up a specification of the rails. He went before the directors to discuss with them the kind of material to be specified. He was himself interested in the patent for cast-iron rails, which he had taken out in conjunction with Mr. Losh, in 1816, and, of course, it was to his interest that his articles should be used. But when requested to give his opinion on the subject, he frankly said to the directors, "Well, gentlemen, to tell you the truth, although it would put 500*l.* in my pocket to specify my own patent rails, I can not do so after the experience I have had. If you take my advice, you will not lay down a single cast-iron rail." "Why?" asked the directors. "Because they will not stand the weight, and you will be at no end of expense for repairs and relays." "What kind of road, then," he was asked, "would you recommend?" "Malleable rails, certainly," said he; "and I can recommend them with the more confidence from the fact that at Killingworth we have had some Swedish bars laid down—nailed to wooden sleepers—for a period of fourteen years, the wagons passing over them daily, and there they are, in use yet, whereas the cast rails are constantly giving way."

Stephenson's recommendation of wrought-iron instead of cast-iron rails was the cause of a rupture between Mr. Losh and himself. Stephenson thought his duty was to give his employers the the best advice; Losh thought his business was to push the patent cast-iron rails wherever he could. Stephenson regarded this view as sordid; and the two finally separated after a quarrel, in high dudgeon with each other.

The price of malleable rails was, however, so high—being then worth about 12*l.* per ton—as compared with cast-iron rails at about 5*l.* 10*s.*, and the saving of expense was so important a consideration with the subscribers, that Stephenson was directed to provide in the specification that only one-half of the rails required—or about 800 tons—should be of malleable iron, and the remainder of cast-iron. The malleable rails were of the kind called "fish-bellied," and weighed 28 lbs. to the yard, being 2¼ inches broad at the top, with the upper flange ¾ inch thick. They were only 2 inches in depth at the points at which they rested on the chairs, and 3¼ inches in the middle or bellied part.

When forming the road, the proper gauge had also to be determined. What width was this to be? The gauge of the first tram-road laid down had virtually settled the point. The gauge of wheels of the common vehicles of the country—of the carts and wagons employed on common roads, which were first used on the tram-roads—was about 4 feet 8½ inches. And so the first tram-roads were laid down of this gauge. The tools and machinery for constructing coal-wagons and locomotives were formed with this gauge in view. The

Wylam wagon-way, afterward the Wylam plate-way, the Killingworth railroad, and the Hetton railroad, were as nearly as possible on the same gauge.

As the period drew near for the opening of the line, the question of the tractive power to be employed was anxiously discussed. At the Brusselton incline, fixed engines must necessarily be made use of; but with respect to the mode of working the railway generally, it was decided that horses were to be largely employed, and arrangements were made for their purchase.

Although locomotives had been regularly employed in hauling coal-wagons on the Middleton Colliery Railway, near Leeds, for more than twelve years, and on the Wylam and Killingworth Railways near Newcastle for more than ten years, great skepticism still prevailed as to the economy of employing them for the purpose in lieu of horses. In this case, it would appear that seeing was *not* believing. The popular skepticism was as great at Newcastle, where the opportunities for accurate observation were the greatest, as anywhere else. In 1824 the scheme of a canal between that town and Carlisle again came up, and, though a few timid voices were raised on behalf of a railway, the general opinion was still in favor of a canal. The example of the Hetton Railway, which had been successfully worked by Stephenson's locomotives for two years past, was pointed to in proof of the practicability of a locomotive line between the two places; but the voice of the press as well as of the public was decidedly against the "new-fangled roads."

"There has been some talk," wrote the "Whitehaven Gazette," "from a puff criticism in the 'Monthly Review,' of an improvement on the principle of railways; but we suspect that this improvement will turn out like the steam carriages, of which we have been told so much, that were to supersede the use of horses entirely, and travel *at a rate almost equal to the speed of the fleetest horse!*" The idea was too chimerical to be entertained, and the suggested railway was accordingly rejected as impracticable.

The "Tyne Mercury" was equally decided against railways. "What person," asked the editor (November 16th, 1824), "would ever think of *paying any thing* to be conveyed from Hexham to Newcastle in something like a coal-wagon, upon a dreary wagon-way, and to be dragged for the greater part of the distance by a ROARING STEAM-ENGINE!" The very notion of such a thing was preposterous, ridiculous, and utterly absurd.

When such was the state of public opinion as to railway locomotion, some idea may be formed of the clearsightedness and moral courage of the Stockton and Darlington directors in ordering three of Stephenson's locomotive engines, at a cost of several thousand pounds, against the opening of the railway.

These were constructed after Stephenson's most matured designs, and embodied all the improvements which he had contrived up to

that time. No. 1 engine, the "Locomotion," which was first delivered, weighed about eight tons. It had one large flue or tube through the boiler, by which the heated air passed direct from the furnace at one end, lined with fire-bricks, to the chimney at the other. The combustion in the furnace was quickened by the adoption of the steam-blast in the chimney. The heat raised was sometimes so great, and it was so imperfectly abstracted by the surrounding water, that the chimney became almost red-hot. Such engines, when put to their speed, were found capable of running at the rate of from twelve to sixteen miles an hour; but they were better adapted for the heavy work of hauling coal-trains at low speeds—for which, indeed, they were specially constructed—than for running at the higher speeds afterward adopted. Nor was it contemplated by the directors as possible, at the time when they were ordered, that locomotives could be made available for the purposes of passenger traveling. Besides, the Stockton and Darlington Railway did not run through a district in which passengers were supposed to be likely to constitute any considerable portion of the traffic.

We may easily imagine the anxiety felt by George Stephenson during the progress of the works toward completion, and his mingled hopes and doubts (though his doubts were but few) as to the issue of this great experiment. When the formation of the line near Stockton was well advanced, the engineer one day, accompanied by his son Robert and John Dixon, made a journey of inspection of the works. The party reached Stockton, and proceeded to dine at one of the inns there. After dinner, Stephenson ventured on the very unusual measure of ordering in a bottle of wine, to drink success to the railway. John Dixon relates with pride the utterance of the master on the occasion. "Now, lads," said he to the two young men, "I venture to tell you that I think you will live to see the day when railways will supersede almost all other methods of conveyance in this country—when mail-coaches will go by railway, and railroads will become the great highways for the king and all his subjects. The time is coming when it will be cheaper for a working man to travel on a railway than to walk on foot. I know there are great and almost insurmountable difficulties to be encountered, but what I have said will come to pass as sure as you now hear me. I only wish I may live to see the day, though that I can scarcely hope for, as I know how slow all human progress is, and with what difficulty I have been able to get the locomotive introduced thus far, notwithstanding my more than ten years' successful experiment at Killingworth." The result, however, outstripped even George Stephenson's most sanguine anticipations; and his son Robert, shortly after his return from America in 1827, saw his father's locomotive adopted as the tractive power on railways generally.

Tuesday, the 27th of September, 1825, was a great day for Darlington. The railway, after having been under construction for more

than three years, was at length about to be opened. The project had been the talk of the neighborhood for so long, that there were few people within a range of twenty miles who did not feel more or less interested about it. Was it to be a failure or a success? Opinions were pretty equally divided as to the railway, but as regarded the locomotive the general belief was that it would "never answer." However, there the locomotive was—"No. 1"—delivered onto the line, and ready to draw the first train of wagons on the opening day.

A great concourse of people assembled on the occasion. Some came from Newcastle and Durham, many from the Aucklands, while Darlington held a general holiday, and turned out all its population. To give *éclat* to the opening, the directors of the company issued a programme of the proceedings, intimating the times at which the procession of wagons would pass certain points along the line. The proprietors assembled as early as six in the morning at the Brusselton fixed engine, where the working of the inclined planes was successfully rehearsed. A train of wagons laden with coals and merchandise was drawn up the western incline by the fixed engine, a length of 1960 yards, in seven and a half minutes, and then lowered down the incline on the eastern side of the hill, 880 yards, in five minutes.

At the foot of the incline the procession of vehicles was formed, consisting of the locomotive engine No. 1, driven by George Stephenson himself; after it six wagons loaded with coals and flour, then a covered coach containing directors and proprietors, next twenty-one coal-wagons fitted up for passengers (with which they were crammed), and lastly six more wagons loaded with coals.

Strange to say, a man on a horse, carrying a flag, with the motto of the company inscribed on it, *Periculum privatum utilitas publica*, headed the procession! A lithographic view of the great event, published shortly after, duly exhibits the horseman and his flag. It was not thought so dangerous a place after all. The locomotive was only supposed to be able to go at the rate of from four to six miles an hour, and an ordinary horse could easily keep ahead of that.

Off started the procession, with the horseman at its head. A great concourse of people stood along the line. Many of them tried to accompany it by running, and some gentlemen on horseback galloped across the fields to keep up with the train. The railway descending with a gentle incline toward Darlington, the rate of speed was consequently variable. At a favorable part of the road Stephenson determined to try the speed of the engine, and he called upon the horseman with the flag to get out of the way! Most probably deeming it unnecessary to carry his *Periculum privatum* farther, the horseman turned aside, and Stephenson "put on the steam." The speed was at once raised to twelve miles an hour, and, at a favorable part of the road, to fifteen. The runners on foot, the gentlemen on horseback, and the horseman with the flag, were consequently soon left far behind. When the train reached Darlington, it was found

that four hundred and fifty passengers occupied the wagons, and that the load of men, coals, and merchandise amounted to about ninety tons.

At Darlington the procession was rearranged. The six loaded coal-wagons were left behind, and other wagons were taken on with a hundred and fifty more passengers, together with a band of music. The train then started for Stockton,—a distance of only twelve miles,—which was reached in about three hours. The day was kept throughout the district as a holiday; and horses, gigs, carts, and other vehicles, filled with people, stood along the railway, as well as crowds of persons on foot, waiting to see the train pass. The whole population of Stockton turned out to receive the procession, and, after a walk through the streets, the inevitable dinner in the Town Hall wound up the day's proceedings.

All this, however, was but gala work. The serious business of the company began on the following day. Upon the result of the experiment now fairly initiated by the Stockton and Darlington Company, the future of railways in a great measure depended. If it failed, like the Croydon and Merstham undertaking, then a great check would unquestionably be given to speculation in railways. If it succeeded, the Stockton and Darlington enterprise would mark the beginning of a new era, and issue in neither more nor less than a complete revolution of the means of communication in all civilized countries.

The circumstances were, on the whole, favorable, and boded success rather than failure. Prudent, careful, thoughtful men were at the head of the concern, interested in seeing it managed economically and efficiently; and they had the advantage of the assistance of an engineer possessed of large resources of mother wit, mechanical genius, and strong common sense. There was an almost unlimited quantity of coal to be carried, the principal difficulty being in accommodating it satisfactorily. Yet it was only after the line had been at work for some time that the extensive character of the coal traffic began to be appreciated. At first it was supposed that the chief trade would be in coal for land sale. But the clause inserted in the original act, at the instance of Mr. Lambton, by which the company were limited to ½*d.* per ton per mile for coal led to Stockton for shipment, led to the most unexpected consequences. It was estimated that only about 10,000 tons a year would be shipped, and that principally by way of ballast. Instead of which, in the course of a very few years, the coal carried on the line for export constituted the main bulk of the traffic, while that carried for land sale was merely subsidiary.

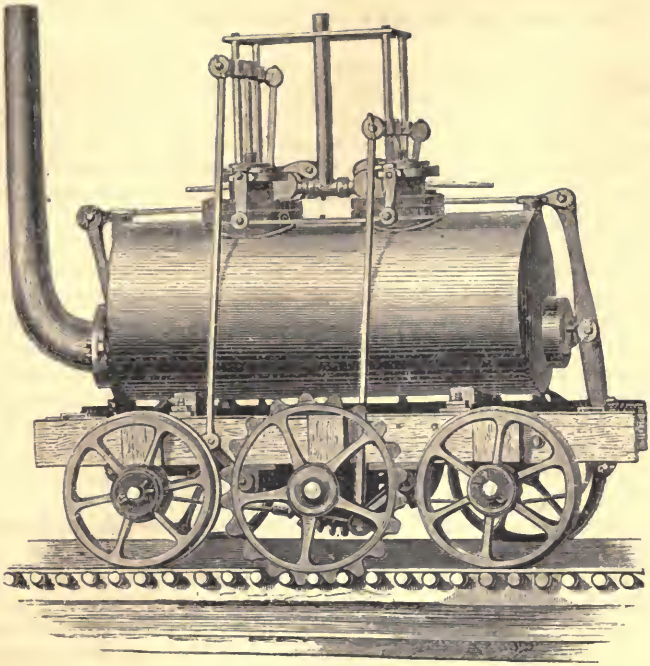
The anticipations of the company as to passenger-traffic were, in like manner, more than realized. At first, passengers were not thought of, and it was only while the works were in progress that the starting of a passenger-coach was seriously contemplated. Some

eighty years since, there was only one post-chaise in Darlington, which ran on three wheels. There are people still living who remember when a coach ran from Stockton three days in the week, passing through Darlington and Barnard Castle; but it was starved off the road for want of support. There was then very little intercourse between the towns, though they were so near to each other, and comparatively so populous; and it was not known whether people would trust themselves to the iron road. Nevertheless, it was determined to make trial of a railway coach, and George Stephenson was authorized to have one built at Newcastle at the cost of the company. This was done accordingly, and the first railway passenger-carriage was built after our engineer's design. It was, however, a very modest, and, indeed, a somewhat uncouth machine, more resembling a showman's caravan than a passenger-coach of any extant form. A row of seats ran along each side of the interior, and a long deal table was fixed in the center, the access being by means of a door at the back end, in the manner of an omnibus. This coach arrived from Newcastle on the day before the opening, and formed part of the procession above described. Stephenson was consulted as to the name of the coach, and he at once suggested the "Experiment;" and by this name it was called. Such was the sole passenger-carrying stock of the Stockton and Darlington Company in the year 1825. But "The Experiment" proved the forerunner of a mighty traffic; and long time did not elapse before it was displaced, not only by improved coaches (still drawn by horses), but afterward by long trains of passenger-carriages drawn by locomotive engines.

The "Experiment" was fairly started as a passenger-coach on the 10th of October, 1825, a fortnight after the opening of the line. It was drawn by one horse, and performed a journey daily each way between the two towns, accomplishing the distance of twelve miles in about two hours. The fare charged was a shilling, without distinction of class; and each passenger was allowed fourteen pounds of luggage free. The "Experiment" was not, however, worked by the company, but was let to contractors, who worked it under an arrangement whereby toll was paid for the use of the line, rent of booking-cabins, etc. The speculation answered so well that several private coaching companies were shortly after got up by innkeepers at Darlington and Stockton, for the purpose of running other coaches upon the railroad, and an active competition for passenger-traffic sprang up.

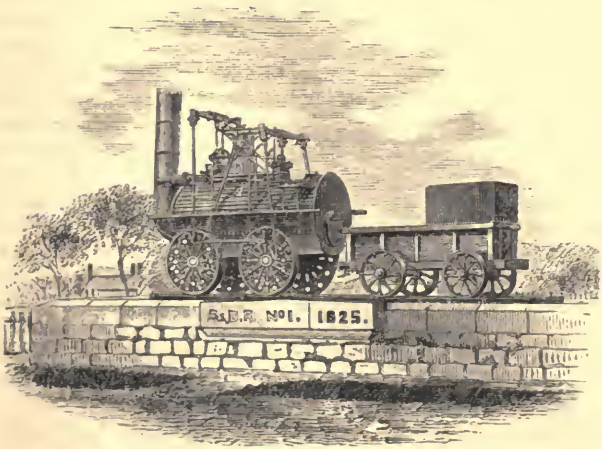
The traffic of all sorts increased so steadily and rapidly, that difficulty was experienced in doing it satisfactorily. It had been provided by the first Darlington Act that the line should be free to all parties to put horses and wagons on the railway at certain prescribed rates, and carry for themselves. This led to confusion, and could not continue with a large and rapidly-increasing traffic. The freight trains

* Before the use of locomotives on the railroad from Jersey City to Newark, say in 1835, cars not greatly differing from the better ones now used on "Horse Railroads" were run by horse-power for many months; distance nine miles.



Blenkinsop's Locomotive, Leeds, 1811.

See page 127.



Coal Engine No. I, "Locomotion," 1825.

Stockton & Darlington R. R.—See page 149.

got so long, that it became necessary to use the locomotive engine to help. Then mixed trains of passengers and merchandise began to run, and the Railway Company found it necessary to take the entire working of the traffic. In time, new coaches were built for the better accommodation of the public, until, finally, passenger-trains were run by the locomotive, though this was not until after the Liverpool and Manchester Company had established this branch of traffic.

The three Stephenson locomotives were from the first employed to work coal-trains, and their efficiency led to the gradual increase of locomotive power. The speed of the engine—slow though it seems now—was in those days regarded marvelous. A race actually came off between No. 1 engine, the "Locomotion," and a stage-coach, traveling from Darlington to Stockton by the ordinary road, and it was regarded a triumph of mechanical skill that the locomotive reached Stockton first, beating the coach a hundred yards! The same engine was in good working order in the year 1846, on the opening of the Middlesborough and Redcar Railway, traveling at the rate of about fourteen miles an hour.

For years the principal hauling of the line was performed by horses. The inclination of the gradients being toward the sea, this was perhaps the cheapest mode of traction, so long as the traffic was not very large. The horse drew the train along the level road until, on reaching a descending gradient, down which the train ran by its own gravity, the animal was unharnessed, when, wheeling round to the other end of the wagons, to which a "dandy-cart" was attached, its bottom only a few inches from the rail, and bringing his step into unison with the speed of the train, he leaped nimbly into his place in the hind car, fitted with a well-filled hay-rack.

The details of the working were gradually perfected by experience, the projectors of the line little thinking that they were laying the foundations of a system which was yet to revolutionize the communications of the world, and confer the greatest blessings on mankind. The commercial results of the enterprise were satisfactory from the opening of the railway. Conferring great public benefit upon the inhabitants, and throwing open entirely new markets for the stores of coal found in the district, the profits to stockholders gave encouragement to the projectors of railways generally, which was not without important effects in stimulating similar enterprises in other districts.

It is pleasing to relate, in connection with this great work—the Stockton and Darlington, projected by Edward Pease, and executed by George Stephenson—that when Mr. Stephenson became a prosperous and celebrated man, he did not forget the friend who had helped him in his early days. He continued to remember Mr. Pease with gratitude and affection, and that gentleman, to the close of his life, was proud to exhibit a handsome gold watch, received as a gift from his celebrated *protégé*, bearing these words—"Esteem and gratitude: from George Stephenson to Edward Pease."

THE LIVERPOOL AND MANCHESTER RAILWAY PROJECTED.

While the coal proprietors of the Auckland district were taking steps to connect their collieries with the sea by an iron railroad, the merchants of Liverpool and Manchester were considering whether some better means could not be devised for bringing these important centers of commerce and manufacture into more direct connection.

There were canals as well as roads between the two places, but all routes were alike tedious and costly, especially as regarded the transit of heavy goods. The route by turnpike was thirty-six miles, by the Duke of Bridgewater's Canal fifty miles, by the Mersey and Irwell navigation the same, and by the Leeds and Liverpool Canal fifty-six miles.

These were all overburdened with traffic. The roads were bad, the tolls heavy, and the haulage expensive. The journey by coach occupied five to six hours, and by wagon nearly a day. Few heavy goods went by road. The canals nearly monopolized this traffic, and charged what they liked. They conducted their business in a drowsy, sleepy, stupid manner. If the merchant complained of delay, he was told to do better if he could. If he objected to the rates, he was warned that if he did not pay them promptly his goods might not be carried at all.

The canal companies were in a position to dictate their own terms, and they did this in such a way as to disgust alike the senders and receivers, so that both Liverpool and Manchester were up in arms against them. Worse than the heavy charges for goods was the occasional entire stoppage of the canals. Sometimes frozen up; sometimes blocked by press of traffic, so that goods lay unmoved for weeks together; at some seasons it occupied a longer time to bring cotton from Liverpool to Manchester by canal-boat than it had done to bring it from New York to Liverpool by sailing ship.

Was there no way of remedying these great and admitted evils? Were the commercial public to be bound hand and foot, and left at the mercy of the canal proprietors? Immense interests at Liverpool and Manchester were at stake. The Liverpool merchants wanted new facilities for sending raw material inland, and the Manchester manufacturers for sending the manufactured products back to Liverpool for shipment. Vast populations had become settled in the towns of South Lancashire, to whom it was of vital importance that the communication with the sea should be regular, constant, and economical.

These considerations early led to the discussion of some improved mode of transit from Liverpool into the interior for heavy goods, and one of the most favored plans was that of a tram-road.

While the project was still in embryo, the rumor of it reached Mr. William James, an enthusiastic advocate of tram-roads and railways. As a land-surveyor and land-agent, as well as coal-owner, he had laid

down many private railroads. He had also laid out and superintended the execution and the working of canals, projected extensive schemes of drainage and inclosure, and was one of the most useful and active men of his time. But a series of unfortunate speculations in mines having seriously impaired his fortunes, he again reverted to his profession of land-surveyor, and was so occupied in the neighborhood of Liverpool when he heard of the scheme set on foot for the construction of the proposed tram-road to Manchester. He at once called upon Mr. Sandars and offered his services as its surveyor. A trial survey was begun, but it was conducted with great difficulty, the inhabitants of the district entertaining much prejudice against the scheme. In some places Mr. James and his surveying party had even to encounter personal violence.

. . . Pamphlets were published and newspapers hired to revile the railway. It was declared that its formation would prevent the cows grazing and hens laying, while the horses passing along the road would be driven distracted. The poisoned air from the locomotives would kill the birds that flew over them, and render the preservation of pheasants and foxes no longer possible. Householders adjoining the projected line were told that their houses would be burnt up by the fire thrown from the engine chimneys, while the air around would be polluted by clouds of smoke. There would no longer be any use for horses; and if railways extended, the species would become extinguished, and oats and hay be rendered unsalable commodities. Traveling by rail would be highly dangerous, and country inns would be ruined. Boilers would burst and blow passengers to atoms. But there was always this consolation to wind up with—that the weight of the locomotive would completely prevent its moving, and that railways, even if made, could *never* be worked by steam-power.

Although the press generally spoke of the Liverpool and Manchester project as a mere speculation—as only one of the many bubble schemes of the period—there were other writers who entertained different views, and boldly and ably announced them. Among the most sagacious newspaper articles of the day, calling attention to the application of the locomotive engine to the purposes of rapid steam-traveling on railroads, was a series which appeared in 1824, in the "Scotsman" newspaper, then edited by Mr. Charles Maclaren. In those publications the wonderful powers of the locomotive were logically demonstrated, and the writer, arguing from the experiments on friction, made more than half a century before, by Vince and Coulomb, which scientific men seemed to have altogether lost sight of, clearly showed that, by the use of steam-power on railroads, the cheaper as well as more rapid transit of persons and merchandise might be confidently anticipated.

Not many years passed before the anticipations of the writer, sanguine and speculative though they were at that time regarded, were amply realized. Even Mr. Nicholas Wood, in 1825, speaking of the

powers of the locomotive, and referring, doubtless, to the speculations of the "Scotsman" as well as of his equally sanguine friend Stephenson, observed: "It is far from my wish to promulgate to the world that the ridiculous expectations, or rather professions, of the enthusiastic speculist will be realized, and that we shall see engines traveling at the rate of twelve, sixteen, eighteen, or twenty miles an hour. Nothing could do more harm toward their general adoption and improvement than the promulgation of such nonsense."*

Among the papers left by Mr. Sandars, we find a letter addressed to him by Sir John Barrow, of the Admiralty, as to the proper method of conducting the case in Parliament, which pretty accurately represents the state of public opinion as to the practicability of locomotive traveling on railroads at the time at which it was written, the 10th of January, 1825. Sir John strongly urged Mr. Sandars to keep the locomotive altogether in the background; to rely upon the proved inability of the canals and common roads to accommodate the existing traffic, and to be satisfied with proving the absolute necessity of a new line of conveyance; above all, he recommended him not even to hint at the intention of carrying passengers. "You will at once," said he, "raise a host of enemies in the proprietors of coaches, post-chaises, innkeepers, etc., whose interests will be attacked, and who, I have no doubt, will be strongly supported, and for what? Some thousands of passengers, *you* say—but a few hundreds, *I* should say—in the year."

He accordingly urged that *passengers* as well as *speed* should be kept entirely out of the act; but, if the latter were insisted on, then he recommended that it should be kept as low as possible—say at five miles an hour!

When George Stephenson, at the interviews with counsel, held previous to the Liverpool and Manchester Bill going into Committee of the House of Commons, confidently stated his expectation of being able to run his locomotive at the rate of twenty miles an hour, Mr. William Brougham frankly told him that if he did not moderate his views, and bring his engine within a *reasonable* speed, he would "inevitably damn the whole thing, and be himself regarded as a maniac, fit only for Bedlam."

The idea thrown out by Stephenson of traveling at a rate of speed double that of the fastest mail-coach appeared at the time so preposterous that he was unable to find any engineer who would risk his reputation in supporting such "absurd views." Speaking of his isolation at that time, he subsequently observed at a public meeting of railway men in Manchester: "He remembered the time when he had very few supporters in bringing out the railway system—when he sought England over for an engineer to support him in his evidence before Parliament, and could find only one man, James Walker, but

* "Wood on Railroads," ed. 1825, p. 290.

was afraid to call that gentleman, because he knew nothing about railways. He had then no one to tell his tale to but Mr. Sandars, of Liverpool, who did listen to him, and kept his spirits up; and his schemes had at length been carried out only by dint of sheer perseverance."

George Stephenson's idea was at that time regarded as but the dream of a chimerical projector. It stood before the public friendless, struggling hard to gain a footing, scarcely daring to lift itself into notice for fear of ridicule. The civil engineers generally rejected the notion of a Locomotive Railway; and when no leading man of the day could be found to stand forward in support of the Killingworth mechanic, its chances of success must indeed have been pronounced but small.

The "Quarterly" scouted the idea of traveling at a greater speed than eight or nine miles an hour. "What can be more palpably absurd and ridiculous than the prospect held out, of locomotives traveling *twice as fast* as stage-coaches! We would as soon expect the people of Woolwich to suffer themselves to be fired off upon one of Congreve's ricochet rockets, as trust themselves to the mercy of such a machine going at such a rate. We will back old Father Thames against the Woolwich Railway for any sum. We trust that Parliament will, in all railways it may sanction, limit the speed to *eight or nine miles an hour*, which we entirely agree with Mr. Sylvester is as great as can be ventured on with safety."

PARLIAMENTARY CONTEST ON THE LIVERPOOL AND MANCHESTER BILL.

The Liverpool and Manchester Bill went into Committee of the House of Commons on the 21st of March, 1825. Mr. Adam, in his opening speech, referred to the cases of the Hetton and Killingworth railroads, where heavy goods were safely and economically transported by means of locomotive engines. "None of the tremendous consequences," he observed, "have ensued from the use of steam in land carriage that have been stated. The horses have not started, nor the cows ceased to give their milk, nor have ladies miscarried at the sight of these things going forward at the rate of four miles and a half an hour." Notwithstanding the petition of two ladies, alleging the great danger to be apprehended from the bursting of the locomotive boilers, he urged the safety of the high-pressure engine, when the boilers were constructed of wrought iron; and as to the rate at which they could travel, he expressed his full conviction that such engines "could supply force to drive a carriage at the rate of five or six miles an hour."

George Stephenson, many years afterward, said: "When I went to Liverpool to plan a line from thence to Manchester, I pledged myself to the directors to attain a speed of ten miles an hour. I said I had no doubt the locomotive might be made to go much faster, but that we had better be moderate at the beginning. The directors said

I was quite right; for that if, when they went to Parliament, I talked of going at a greater rate than ten miles an hour, I should put a cross upon the concern. It was not an easy task for me to keep the engine down to ten miles an hour, but it must be done, and I did my best."

George Stephenson stood before the committee to prove what the public opinion of that day held to be impossible. The self-taught mechanic had to demonstrate the practicability of accomplishing that which the most distinguished engineers of the time regarded as impracticable. Clear though the subject was to himself, and familliar as he was with the powers of the locomotive, it was no easy task for him to bring home his convictions, or even to convey his meaning, to the less informed minds of his hearers. In his strong Northumbrian dialect, he struggled for utterance, in the face of the sneers, interruptions, and ridicule of the opponents of the measure, and even of the committee, some of whom shook their heads and whispered doubts as to his sanity when he energetically avowed that he could make the locomotive go at the rate of twelve miles an hour! It was so grossly in the teeth of all the experience of honorable members, that the man "must certainly be laboring under a delusion!"

And yet his large experience of railways and locomotives, as described by himself to the committee, entitled this "untaught, inarticulate genius," as he has been described, to speak with confidence on the subject. Beginning with his experience as a brakeman at Killingworth in 1803, he went on to state that he was appointed to take the entire charge of the steam-engines in 1813, and had superintended the railroads connected with the numerous collieries of the Grand Allies from that time downward. He had laid down or superintended the railways at Burradon, Mount Moor, Springwell, Bedlington, Hetton and Darlington, besides improving those at Killingworth, South Moor, and Derwent Crook. He had constructed fifty-five steam-engines, of which sixteen were locomotives. Some of these had been sent to France.

The engines constructed by him for the working of the Killingworth Railroad, eleven years before, had continued steadily at work ever since, and fulfilled his most sanguine expectations. He was prepared to prove the safety of working high-pressure locomotives on a railroad, and the superiority of this mode of transporting goods over all others. As to speed, he said he had recommended eight miles an hour with twenty tons, and four miles an hour with forty tons; but he was quite confident that much more might be done. Indeed, he had no doubt they might go at the rate of twelve miles. As to the charge that locomotives on a railroad would so terrify the horses in the neighborhood that to travel on horseback or to plow the adjoining fields would be rendered highly dangerous, the witness said that horses learned to take no notice of them, though there *were* horses that would shy at a wheelbarrow. A mail-coach was likely to be more shied at by horses than a locomotive. In the neighborhood of

Killingworth, the cattle in the fields went on grazing while the engines passed them, and the farmers made no complaints. As to accidents, Stephenson knew of none that had occurred with his engines.

The point on which Stephenson was hardest pressed was that of speed. "I believe," he says, "that it would have lost the company their bill if he had gone beyond eight or nine miles an hour. If he had stated his intention of going twelve or fifteen miles an hour, not a single person would have believed it to be practicable."

CHAT MOSS—CONSTRUCTION OF THE RAILWAY.

The appointment of principal engineer of the railway was taken into consideration at the first meeting of the directors, held at Liverpool subsequent to the passing of the act of incorporation, and they proceeded to appoint George Stephenson principal engineer, at a salary of 1,000*l.* per annum. He at once removed his residence to Liverpool.

In the construction of the railway, George Stephenson's capacity for organizing and directing the labors of a large number of workmen of all kinds eminently displayed itself. A vast quantity of ballast-wagons had to be constructed for the purposes of the work, and implements and materials had to be collected, before the mass of labor to be employed could be efficiently set in motion at the various points of the line. There were not at that time, as there are now, large contractors, possessed of railway facilities, capable of executing earth-works on a large scale. Our engineer had, therefore, not only to contrive the instruments, but to organize the labor, and direct it in person. The very laborers themselves had to be trained to their work by him; and it was on the Liverpool and Manchester line that Mr. Stephenson organized the staff of that formidable band of railway navvies, whose handiworks will be the wonder and admiration of succeeding generations. Looking at their gigantic traces, the men of some future age may be found to declare, of the engineer and his workmen, that "there were giants in those days." The works of the Liverpool and Manchester Railway were then regarded as of a stupendous kind.

By the end of 1828, the directors found they had expended 460,000*l.*, and they were still far from completion. Mr. Cropper, one of the directors, who took an active interest in their progress, said to Stephenson one day, "Now, George, thou must get on with the railway, and have it finished without farther delay: thou must really have it ready for opening by the first day of January next." "Consider the heavy character of the works, sir, and how much we have been delayed by the want of money, not to speak of the wetness of the weather: it is impossible." "Impossible!" rejoined Cropper; "I wish I could get Napoleon to thee—he would tell thee there is no such word as 'impossible' in the vocabulary." "Tush!" exclaimed Stephenson, with warmth, "do n't speak to me about Napoleon! Give

me men, money, and materials, and I will do what Napoleon couldn't do—drive a railroad from Liverpool to Manchester over Chat Moss!" And truly the formation of a high road over that bottomless bog was apparently a more difficult task than the making even of Napoleon's far-famed road across the Simplon.

It may well be supposed that Stephenson's time was fully occupied in superintending the extensive and for the most part novel works connected with the railway, and that even his extraordinary powers of labor and endurance were taxed to the utmost during the four years that they were in progress. Almost every detail in the plans was directed and arranged by himself. Every bridge, from the simplest to the most complicated, including the then novel structure of the "skew bridge," iron girders, siphons, fixed engines, and the machinery for working the tunnel at the Liverpool end, had all to be thought out by his own head, and reduced to definite plans under his own eyes. Besides all this, he had to design the "Rolling Stick" in anticipation of the opening of the railway. He must be prepared with wagons, trucks, and carriages, himself superintending their manufacture. The permanent road, turn-tables, switches, and crossings —in short, the entire structure and machinery of the line, from the turning of the first sod to the running of the first train of carriages on the railway, went on under his immediate supervision. And it was in the midst of this vast accumulation of work and responsibility that the battle of the locomotive engine had to be fought—a battle not merely against material difficulties, but against the still more trying obstructions of deeply-rooted mistrust and prejudice on the part of a considerable minority of the directors.

He had no staff of experienced assistants,—not even a staff of draughtsmen in his office,—but only a few pupils learning their business, and he was frequently without even their help. The principal draughtsman was Mr. Thomas Gooch, a pupil he had brought with him from Newcastle. "I may say," writes Mr. Gooch, "that nearly the whole of the working and other drawings, as well as the various land-plans for the railway, were drawn by my own hand. They were done at the company's office in Clayton Square during the day, from instructions supplied in the evenings by Mr. Stephenson, either by word of mouth, or by little, rough hand-sketches on letter-paper. The evenings were also generally devoted to my duties as secretary, in writing (mostly from his own dictation) his letters and reports, or in making calculations and estimates. The mornings before breakfast were not unfrequently spent by me in visiting, and lending a helping hand in the tunnel and other works near Liverpool—the untiring zeal and perseverance of George Stephenson never for an instant flagging, and inspiring with a like enthusiasm all who were engaged under him in carrying forward the works."

Occasionally he would take an early ride before breakfast, to inspect the progress of the Sankey viaduct. He had a favorite horse,

brought by him from Newcastle, called "Bobby"—so tractable that, with his rider on his back, he would walk up to a locomotive with the steam blowing off, and put his nose against it without shying. "Bobby," saddled and bridled, was brought to Stephenson's door betimes in the morning, and, mounting him, he would ride the fifteen miles to Sankey, putting up at a little public house which then stood upon the banks of the canal. There he had his breakfast of "crowdy," which he made with his own hands. It consisted of oatmeal stirred into a basin of hot water—a sort of porridge—which was supped with cold sweet milk. After this frugal breakfast he would go upon the works, and remain there, riding from point to point for the greater part of the day. His strong natural acumen showed itself even in such matters as grammar and composition—a department of knowledge in which, it might be supposed, he could scarcely have had either time or opportunity to acquire much information. But here, as in all other things, his shrewd common sense came to his help, and his simple, vigorous English might almost be cited as a model of composition.

He delighted to test the knowledge of his young companions, and to question them upon the principles of mechanics. If they were not quite "up to the mark" on any point, there was no escaping detection by evasive or specious explanations on their part. He felt that he himself had been made stronger and better through his encounters with difficulty, and he would not have the road of knowledge made too smooth and easy for them. "Learn for yourselves—think for yourselves," he would say: "make yourselves masters of principles—persevere—be industrious—and there is then no fear of you." And not the least emphatic proof of the soundness of this system of education, as conducted by George Stephenson, was afforded by the after-history of the pupils themselves. There was not one of those trained under his eye who did not rise to eminent usefulness and distinction as an engineer.

ROBERT STEPHENSON'S RESIDENCE IN COLOMBIA, AND RETURN—THE BATTLE OF THE LOCOMOTIVE—"THE ROCKET."

Robert Stephenson, who was absent from England during the construction of the Liverpool Railway, was now about to rejoin his father and take part in "the battle of the locomotive," which was impending. On his return from Edinburgh College, at the end of 1821, he had assisted in superintending the works of the Hetton Railway until its opening in 1822, after which he proceeded to Liverpool to take part with Mr. James in surveying the proposed railway there. In the following year he was assisting his father in the working survey of the Stockton and Darlington Railway; and when the Locomotive Engine Works were started in Forth Street, Newcastle, he took an active part in that concern. "The factory," he says, "was in active operation in 1824; I left England for Colombia in June of

that year, having finished drawing the designs of the Brusselton stationary engines for the Stockton and Darlington Railway before I left." Speculation was very rife at the time, and among the most promising adventures were the companies organized for the purpose of working the gold and silver mines of South America.

The Colombian Mining Association of London offered an engagement to young Stephenson to go out to Mariquita, and take charge of the engineering operations of that company. Robert was himself desirous of accepting it, but his father said it would first be necessary to ascertain whether the proposed change would be for his good. His health had been very delicate for some time, partly occasioned by his rapid growth, but principally because of his close application to work and study. Father and son proceeded together to call upon Dr. Headlam, the eminent physician of Newcastle, and to his great relief the doctor decided that a temporary residence in a warm climate was the very thing likely to be most beneficial to him.

After a tolerably prosperous voyage, he landed at La Guayra, on the north coast of Venezuela, on the 23d of July; from thence he proceeded to Caraccas, the capital of the district, fifteen miles inland. There he remained two months, unable to proceed, because of the wretched state of the roads. About the beginning of October, he set out on mule-back for Bogota, the capital, twelve hundred miles distant, through a very difficult region. In the course of the journey, Robert visited many of the districts reported to be rich in minerals, but he met with few traces, except of copper, iron, and coal, with occasional indications of gold and silver. He found the people ready to furnish information, which, however, when tested, usually proved worthless. A guide, whom he employed for weeks, kept him buoyed up with the hope of finding richer mining places than he had yet seen; but when he professed to be able to show him mines of "brass, steel, alcohol, and pinchbeck," Stephenson discovered him to be an incorrigible rogue, and dismissed him. At length he reached Bogota, and after an interview with Mr. Illingworth, the commercial manager of the Mining Company, he proceeded to Honda, crossed the Magdalena, and shortly after reached the site of his intended operations on the eastern slope of the Andes.

Robert Stephenson's residence in Colombia was not without disagreeable incidents; his men were intemperate and unruly; the captain of the miners quarreled and fought with the men, and was insolent to his chief. Disease also fell upon Mr. Stephenson—first, fever, and then visceral derangement, followed by a return of his "old complaint, a feeling of oppression in the breast." No wonder that in the midst of these troubles he grew home-sick; he had stuck to his post, his duty, and kept up his courage; and by mildness, firmness, and the display of cool judgment, he contrived to keep the men to their work, and gradually carry forward the enterprise. By July, 1826, quietness and order were restored, and the works were proceed-

ing more satisfactorily, though the yield of silver was not as yet very promising; his opinion was that at least three years' diligent and costly operations would be necessary to render the mines productive.

Meanwhile he removed to the dwelling erected for his accommodation at Santa Anna. The structure, after the fashion of the country, was of split and flattened bamboo, tied together with the long fibers of a dried climbing plant; the roof was of palm-leaves, and the ceiling of reeds. When an earthquake shakes the district, the inmates of such a fabric merely feel as if shaken in a basket. In front of the cottage lay a woody ravine, extending almost to the base of the Andes, gorgeously clothed in primeval vegetation—magnolias, palms, bamboos, tree-ferns, acacias, cedars; and towering over all were the great almendrons, with their smooth, silvery stems, bearing aloft noble clusters of pure white blossom. The forest was haunted by myriads of gay insects, butterflies with wings of dazzling luster, birds of brilliant plumage, humming-birds, golden orioles, toucans, and a host of solitary warblers. But the glorious sunsets seen from his cottage-porch more than all astonished and delighted the young engineer, and he was accustomed to say that, after having witnessed them, he was reluctant to accuse the ancient Peruvians of idolatry.

But all these natural beauties failed to reconcile him to the harassing difficulties of his position, which continued to increase rather than diminish. He, therefore, determined to leave at the end of his three-years' engagement, and communicated his decision to the directors accordingly.

In a letter to Mr. Illingworth, then resident at Bogota, dated the 24th of March, 1826, Robert wrote as follows: "Nothing but the fullest consent of my partners in England could induce me to stay in this country, and the assurance that no absolute necessity existed to call me home. I must also have the consent of my father. I know that he must have suffered severely from my absence, but that having been extended so far beyond the period he was led to expect, may have induced him to curtail his plans, which, had they been accomplished, as they would have been by my assistance, would have placed us both in a situation far superior to any thing that I can hope for as the servant of an association however wealthy and liberal. What I might do in England is, perhaps, known to myself only; it is difficult, therefore, for the association to calculate upon rewarding me to the full extent of my prospects at home. My prosperity is involved in that of my father, whose property was sacrificed in laying the foundations of an establishment for me; his capital being invested in a concern which requires the greatest attention, and which, with our personal superintendence, could not fail to secure that independence which forms so principally the object of all our toil."

On receiving his letter, the board, through Mr. Richardson, of Lombard Street, one of the directors, communicated with his father at Newcastle, representing that if he would allow his son to remain

in Colombia the company would make it "worth his while." To this the father gave a decided negative, and intimated that he himself urgently needed his son's assistance, and that he must return at the close of his three years' term—a decision, Robert wrote, "at which I feel much gratified, as it is clear that he is as anxious to have me back in England as I am to get there."

At the same time, Edward Pease, partner in the Newcastle firm, wrote Robert to the following effect: "I can assure thee that the business at Newcastle, as well as thy father's engineering, have suffered very much from thy absence, and, unless thou soon return, the former will be given up, as Mr. Longridge is not able to give it that attention it requires; and what *is* done is not done with credit to the house." The idea of the manufactory being given up, which Robert had labored so hard to establish, was painful in the extreme, and he wrote to Mr. Illingworth, urging that arrangements be made enabling him to leave without delay. Meantime he was prostrated by another violent attack of aguish fever; and when able, wrote, June, 1827, that he was "completely wearied and worn down with vexation."

At length, when sufficiently recovered from his attack, he set out on his voyage homeward in the beginning of August. At Mompox, on his way down the river Magdalena, he met Mr. Bodmer, his successor, with a fresh party of Miners from England, on their way up the country to the quarters which he had just quitted. Next day a steam-boat was met ascending the river, with Bolivar the Liberator on board, on his way to Bogota; and it was a mortification to our engineer that he had only a passing sight of that distinguished man.

Arrived at the port of Carthagena, on his return, he found himself under the necessity of waiting some time for a ship. The delay was very irksome to him, the more so as the place was then desolated by the ravages of the yellow fever. While sitting one day in the large, bare, comfortless public room of the miserable hotel at which he put up, he observed two strangers, whom he at once perceived to be English. One of the strangers was a tall, gaunt man, shrunken and hollow-looking, shabbily dressed, and apparently poverty-stricken. On making inquiry, he found it was Trevithick, the builder of the first railroad locomotive! He was returning home from the gold mines of Peru penniless. Robert Stephenson lent him 50*l.* to enable him to reach England; and though he was afterward heard of as an inventor there, he had no farther part in the ultimate triumph of the locomotive. But Trevithick's misadventures on this occasion had not yet ended; for before he reached New York he was wrecked, and Robert Stephenson with him.

After a short tour in the United States and Canada, Robert Stephenson and his friend took ship for Liverpool, where they arrived at the end of November, and at once proceeded to Newcastle. The factory, we have seen, was by no means in a prosperous state. During the time Robert had been in America it had been carried on at a

considerable loss; and Edward Pease, very much disheartened, wished to retire from it, but George Stephenson being unable to raise the requisite money to buy him out, the establishment was of necessity carried on by its then partners until the locomotive could be established in public estimation as a practicable and economical working power. Robert Stephenson immediately instituted a rigid inquiry into the workings of the concern, unraveled the accounts, which had been allowed to fall into confusion during his father's absence at Liverpool, and very shortly succeeded in placing the affairs of the factory in a more healthy condition. In all this he had the hearty support of his father, as well as of the other partners.

The works of the Liverpool and Manchester Railway were now approaching completion. But the directors had not yet decided as to the motive power to be employed in working the line. The differences of opinion were apparently irreconcilable. It was necessary, however, to come to some decision without loss of time, and many board meetings were held to discuss the subject. The old-fashioned horse system was not without advocates; but, looking at the large traffic there was likely to be, and the probable delays in transit, if this method were adopted, the directors concluded that the employment of horse-power was inadmissible.

Fixed engines had many advocates; the locomotive very few: it stood as yet almost in a minority of one—George Stephenson. It may be mentioned that the Newcastle and Carlisle Railway Act was conceded in 1829 on the express condition that it should *not* be worked my locomotives, but by horses only.

Grave doubts still existed as to the practicability of working a large traffic by means of traveling engines. The most celebrated engineers did not believe in the locomotive, and would scarcely take the trouble to examine it. The ridicule with which George Stephenson had been assailed by the barristers before the Parliamentary Committee had not been altogether distasteful to them. Perhaps they did not relish the idea of a man who had picked up his experience in Newcastle coal-pits appearing in the capacity of a leading engineer before Parliament, and attempting to establish a new system.

The directors could not disregard the adverse and conflicting views of the professional men whom they consulted. But Stephenson had so repeatedly and earnestly urged upon them the propriety of making a trial of the locomotive before coming to any decision against it, that they authorized him to proceed with the construction of one of his engines by way of experiment. In their annual report, March 27th, 1828, they state that they had, after due consideration, authorized the engineer "to prepare a locomotive engine, which, from the nature of its construction, and from experiments already made, he is of opinion will be effective for the purposes of the company, without proving an annoyance to the public." The locomotive thus ordered was

placed upon the line in 1829, and was found of great service in drawing wagons full of marl from the cuttings.

Meantime the discussion proceeded as to the power to be permanently employed. The directors were inundated with schemes of all sorts. The projectors of England, France, and America seemed to be let loose upon them. There were plans for working the wagons along the line by water-power. Some proposed hydrogen, and others carbonic acid, gas. Atmospheric pressure had its eager advocates. And various kinds of fixed and locomotive steam-power were suggested. Thomas Gray urged his plan of a greased road with cog-rails; and Messrs. Vignolles and Ericsson recommended the adoption of a central friction-rail, against which two horizontal rollers under the locomotive, pressing upon the sides of this rail, were to afford the means of ascending the inclined planes.

The directors felt unable to choose from amid these projects. Their engineer expressed himself decidedly in favor of smooth rails and locomotive engines, confident that they would be found the most economical and by far the most convenient moving power. The Darlington Railway being now at work, a deputation went down to inspect the fixed and locomotive engines on that line, as well as at Hetton and Killingworth. They returned with much information; but their testimony as to the relative merits of the two kinds of engines was so contradictory, that the directors were as far as ever from a decision.

They then resolved to call to their aid two professional engineers of high standing, who should visit the Darlington and Newcastle railways, carefully examine both modes, and report to them fully on the subject. The gentlemen selected were Mr. Walker, of Limehouse, and Mr. Rastrick, of Stourbridge. After careful examination, they made their report in the spring of 1829. They concurred in the opinion that the cost of an establishment of fixed engines would be somewhat greater than that of locomotives to do the same work, but they thought the annual charge would be less if the former were adopted. It was admitted that there appeared more grounds for expecting improvements in the construction and working of locomotives than of stationary engines. "On the whole, however, and looking especially at the computed annual charge of working the road on the two systems, on a large scale, Messrs. Walker and Rastrick were of opinion that fixed engines were preferable, and accordingly recommended their adoption to the directors. And in order to carry the system recommended by them into effect, they proposed to divide the railroad into nineteen stages of about a mile and a half each, with twenty-one engines fixed at the different points to work the trains forward.

Such was the result, so far, of George Stephenson's labors. The two best practical engineers of the day concurred in reporting substantially in favor of the employment of fixed engines. Not a single professional man of eminence could be found to coincide with the

engineer of the railway in his preference for locomotive over fixed engine power. He had scarcely a supporter, and the locomotive system seemed on the eve of being abandoned. Still he did not despair. With the profession against him, and public opinion against him—for the most frightful stories went abroad respecting the dangers, the unsightliness, and the nuisance which the locomotive would create —Stephenson held to his purpose. Even in this, apparently the darkest hour of the locomotive, he did not hesitate to declare that locomotive railroads would, before many years had passed, be "the great highways of the world."

He urged his views in all ways, in season, and, as some of them thought, out of season. He pointed out the greater convenience of locomotive power for the purposes of a public highway, likening it to a series of short, unconnected chains, any one of which could be removed and another substituted, without interruption to the traffic; whereas the fixed-engine system might be regarded in the light of a continuous chain extending between the two termini, the failure of any link of which would derange the whole. But the fixed-engine party were very strong at the board, and, led by Mr. Cropper, they urged the propriety of forthwith adopting the report of Messrs. Walker and Rastrick. Mr. Sandars and Mr. William Rathbone, on the other hand, desired that a fair trial should be given to the locomotive; and they objected to the expenditure of the large capital necessary to construct engine-houses, with their fixed engines, ropes, and machinery, until they had tested the powers of the locomotive as recommended by their own engineer. George Stephenson continued to urge upon them that the locomotive was yet capable of great improvements, if proper inducements were held out to inventors and machinists to make them; and he pledged himself that, if time were given him, he would construct an engine that should satisfy their requirements, and prove itself capable of working heavy loads along the railway with speed, regularity, and safety. At length, influenced by his persistent earnestness not less than by his arguments, the directors, at the suggestion of Mr. Harrison, determined to offer a prize of 500*l.* for the best locomotive engine, which, on a certain day, should be produced on the railway, and perform certain specified conditions in the most satisfactory manner.

The requirements of the directors as to speed were not excessive. All that they asked for was that ten miles an hour should be maintained. Perhaps they had in mind the animadversions of the "Quarterly Reviewer," on the absurdity of traveling at a greater velocity, and also the remarks published by Mr. Nicholas Wood, whom they selected to be one of the judges of the competition, in conjunction with Mr. Rastrick, of Stourbridge, and Mr. Kennedy, of Manchester.

It was now felt that the fate of railways in a great measure depended upon the issue of this appeal to the mechanical genius of Eng-

land. When the advertisement of the prize for the best locomotive was published, scientific men began more particularly to direct their attention to the new power which was thus struggling into existence. In the mean time public opinion, on the subject of railway working remained suspended, and the progress of the undertaking was watched with intense interest.

During the progress of this important controversy George Stephenson was in constant communication with his son Robert, who made frequent visits to Liverpool, to assist his father in the preparation of his reports to the board on the subject. Mr. Swanwick remembers the vivid interest of the evening discussions which then took place between father and son as to the best mode of increasing the powers and perfecting the mechanism of the locomotive. He wondered at their quick perception and rapid judgment on each other's suggestions; at the mechanical difficulties which they anticipated and provided for in the practical arrangement of the machine; and he speaks of these evenings as most interesting displays of two actively ingenious and able minds stimulating each other to feats of mechanical invention, by which it was ordained that the locomotive engine should become what it now is. These discussions became more frequent, and still more interesting, after the public prize had been offered for the best locomotive by the directors of the railway, and the working plans of the engine, which they proposed to construct, had to be settled.

One of the most important considerations in the new engine was the arrangement of the boiler and the extension of its heating surface, to enable steam enough to be raised rapidly and continuously, for the purpose of maintaining high rates of speed. The quantity of steam generated must chiefly depend upon the quantity of fuel consumed in the furnace, and, by necessary consequence, upon the high rate of temperature maintained.

It will be remembered that in Stephenson's first Killingworth engines he stimulated combustion in the furnace by throwing the waste steam into the chimney, thereby accelerating the ascent of the current of air, greatly increasing the draught, and consequently the temperature of the fire. This plan was adopted as early as 1815, and was so successful that he attributed to it the greater economy of the locomotive as compared with horse-power. Hence its continuance upon the Killingworth Railway. Though this steam-blast greatly quickened combustion and contributed to the rapid production of high-pressure steam, the limited amount of heating surface presented to the fire was still felt to be an obstacle to the complete success of the locomotive engine. Mr. Stephenson endeavored to overcome this by lengthening the boilers and increasing the surface by the flue-tubes. The "Lancashire Witch," which he built for the Bolton Railway, and used in forming the Liverpool and Manchester embankments, was constructed with a double tube, each of which contained

a fire, and passed longitudinally through the boiler. But this arrangement necessarily led to a considerable increase in the weight of those engines, which amounted to about twelve tons each; and as six tons was the limit allowed for engines admitted to the Liverpool competition, it was clear that the time was come when the Killingworth engine must undergo a farther important modification.

For many years ingenious mechanics had been engaged in attempting to solve the problem of the best and most economical boiler for the production of high-pressure steam. The use of tubes in boilers for increasing the heating surface had long been known. As early as 1780, Matthew Boulton employed copper tubes longitudinally in the boiler of the Wheal Busy engine in Cornwall—the fire passing *through* the tubes—and it was found that the production of steam was thereby considerably increased.* The use of tubular boilers afterward became common in Cornwall. In 1815, Trevithick invented his light high-pressure boiler for portable purposes, in which, to "expose a large surface to the fire," he constructed the boiler of a number of small perpendicular tubes "opening into a common reservoir at the top." In 1823, W. H. James contrived a boiler composed of a series of annular wrought-iron tubes, placed side by side, and bolted together, so as to form by their union a long cylindrical boiler, in the center of which, at the end, the fire-place was situated. The fire played round the tubes, which contained the water. In 1826, James Neville took out a patent for a boiler with vertical tubes surrounded by the water, through which the heated air of the furnace passed, explaining also, in his specification, that the tubes might be horizontal or inclined, according to circumstances. Mr. Goldsworthy Gurney, the persevering adaptor of steam carriages to traveling on common roads, applied the tubular principle in the boiler of his engine, in which the steam was generated *within* the tubes; while the boiler invented by Messrs. Summers and Ogle for their turnpike-road steam carriage consisted of a series of tubes placed vertically over the furnace, through which the heated air passed before reaching the chimney.

About the same time George Stephenson was trying the effect of introducing small tubes in the boilers of his locomotives, with the object of increasing their evaporative power. In 1829, he sent to France two engines, constructed at the Newcastle works for the Lyons and St. Etienne Railway, in the boilers of which tubes were placed containing water. The heating surface was thus considerably increased; but the expedient was not successful, for the tubes, becoming furred with deposit, shortly burned out and were removed. It was then

* Some correspondence took place between Boulton and Watt on the subject, when the latter was scheming the application of the steam-engine to locomotive purposes. In a letter to Boulton, dated the 27th of August, 1784, Watt said, "Perhaps some means may be hit upon to make the boiler cylindrical *with a number of tubes passing through*, like the organ-pipe condenser, whereby it might be thinner and lighter; but," he added, "I fear this would be too subject to accidents."

that M. Seguin, the engineer of the railway, is said to have adopted his plan of employing horizontal tubes through which the heated air passed in streamlets, and for which he took out a French patent.

In the mean time, Mr. Henry Booth, whose attention had been directed to the subject, on the prize being offered for the best locomotive to work that line, proposed the same method which, unknown to him, Matthew Boulton had employed, but not patented, in 1780, and James Neville had patented, but not employed, in 1826; and it was carried into effect by Robert Stephenson in the construction of the "Rocket," which won the prize at Rainhill in October, 1829. The following is Mr. Booth's account in a letter:

"I was in almost daily communication with Mr. Stephenson at the time, and I was not aware that he had any intention of competing for the prize till I communicated to him my scheme of a multitubular boiler. This new plan of boiler comprised the introduction of numerous small tubes, two or three inches in diameter, and less than one-eighth of an inch thick, through which to carry the fire, instead of a single tube or flue eighteen inches in diameter, and about half an inch thick, by which plan we not only obtain a very much larger heating surface, but the heating surface is much more effective, as there intervenes between the fire and the water only a thin sheet of copper or brass, not an eighth of an inch thick, instead of a plate of iron of four times the substance, as well as an inferior conductor of heat.

"When the conditions of trial were published, I communicated my multitubular plan to Mr. Stephenson, and proposed to him that we should jointly construct an engine, and compete for the prize. Mr. Stephenson approved the plan, and agreed to my proposal. He settled the mode in which the fire-box and tubes were to be mutually arranged and connected, and the engine was constructed at the works of Messrs. Robert Stephenson & Co., Newcastle-on-Tyne.

"I am ignorant of M. Seguin's proceedings in France, but I claim to be the inventor in England, and feel warranted in stating, without reservation, that, until I named my plan to Mr. Stephenson, with a view to compete for the prize at Rainhill, it had not been tried, and was not known, in this country."

From the well known high character of Mr. Booth, we believe his statement to be made in perfect good faith, and that he was as much in ignorance of the plan patented by Neville as he was of that of Seguin. As we have seen, from the many plans of tubular boilers invented during the preceding thirty years, the idea was not new; and we believe Mr. Booth entitled to the merit of inventing the method which was so effectually applied in the construction of the famous "Rocket" engine.

The circumstances connected with the construction of the "Rocket," as described by Robert Stephenson, may be briefly stated. The tubular principle was adopted in a more complete manner than had yet

been attempted. Twenty-five copper tubes, each three inches in diameter, extended from one end of the boiler to the other, the heated air passing through them on its way to the chimney; and the tubes being surrounded by the water of the boiler, it will be obvious that a large extension of the heating surface was thus effectually secured. The principal difficulty was in fitting the copper tubes in the boiler-ends so as to prevent leakage. They were manufactured by a Newcastle coppersmith, and soldered to brass screws which were screwed into the boiler-ends, standing out in great knobs. When the tubes were thus fitted, and the boiler was filled with water, hydraulic pressure was applied; but the water squirted out at every joint, and the factory floor was soon flooded. Robert went home in despair; and, in the first moment of grief, he wrote to his father that the whole thing was a failure. By return of post came a letter from his father, telling him that despair was not to be thought of—that he must "try again;" and he suggested a mode of overcoming the difficulty, which his son had already anticipated and proceeded to adopt. It was, to bore clean holes in the boiler-ends, fit in the smooth copper tubes as tightly as possible, solder up, and then raise the steam. This plan succeeded perfectly, the expansion of the copper tubes completely filling up all interstices, and producing a perfectly water-tight boiler, capable of withstanding extreme external pressure.

The mode of employing the steam-blast for the purpose of increasing the draught in the chimney was also the subject of numerous experiments. When the engine was first tried, it was thought that the blast in the chimney was not sufficiently strong for the purpose of keeping up the intensity of the fire in the furnace, so as to produce steam with the required velocity. The expedient was, therefore, adopted, of hammering the copper tubes at the point at which they entered the chimney, whereby the blast was considerably sharpened; and on a farther trial it was found that the draught was increased to such an extent as to enable abundance of steam to be raised. The rationale of the blast may be explained by referring to the effect of contracting the pipe of a water-hose, by which the force of the jet of water is proportionately increased. Widen the nozzle of the pipe and the jet is in like manner diminished. So it is with the steam-blast in the chimney of the locomotive.

Doubts were, however, expressed, whether the greater draught obtained by the contraction of the blast-pipe was not counterbalanced in some degree by the negative pressure upon the piston. Hence a series of experiments was made with pipes of different diameters, and their efficiency was tested by the amount of vacuum that was produced in the smoke-box. The degree of rarefaction was determined by a glass tube fixed to the bottom of the smoke-box, and descending into a bucket of water, the tube being open at both ends. As the rarefaction took place, the water would, of course, rise in the tube, and the height to which it rose above the surface of the water in the

bucket was made the measure of the amount of rarefaction. These experiments proved that a considerable increase of draught was obtained by the contraction of the orifice; accordingly, the two blast-pipes, opening from the cylinders into either side of the "Rocket" chimney, and turned up within it, were contracted slightly below the area of the steam-ports; and, before the engine left the factory, the water rose in the glass tube three inches above the water in the bucket.

The other arrangements of the "Rocket" were briefly these: the boiler was cylindrical, with flat ends, six feet in length, and three feet four inches in diameter. The upper half of the boiler was used as a reservoir for the steam, the lower half being filled with water. Through the lower part the copper tubes extended, being open to the fire-box at one end and to the chimney at the other. The fire-box, or furnace, two feet wide and three feet high, was attached immediately behind the boiler, and was also surrounded with water. The cylinders of the engine were placed on each side of the boiler, in an oblique position, one end being nearly level with the top of the boiler at its after end, and the other pointing toward the center of the foremost or driving pair of wheels, with which the connection was directly made from the piston-rod to a pin on the outside of the wheel. The engine, together with its load of water, weighed only four tons and a quarter; and it was supported on four wheels, not coupled. The tender was four-wheeled, and similar in shape to a wagon—the foremost part holding the fuel, and the hind part a water-cask.

When the "Rocket" was finished, it was placed upon the Killingworth Railway for the purpose of experiment. The new boiler arrangement was found perfectly successful. The steam was raised rapidly and continuously, and in a quantity which then appeared marvelous. The same evening Robert dispatched a letter to his father at Liverpool, informing him, to his great joy, that the "Rocket" was "all right," and would be in complete working trim by the day of trial. The engine was shortly after sent by wagon to Carlisle, and thence shipped for Liverpool.

The time so much longed for by George Stephenson had now arrived, when the merits of the passenger locomotive were about to be put to test. He had fought the battle for it until now almost single-handed. Engrossed by his daily labors and anxieties, and harassed by difficulties and discouragements which would have crushed the spirits of a less resolute man, he had held firmly to his purpose through good and through evil report. The hostility which he experienced from some of the directors opposed to the adoption of the locomotive was the circumstance that caused him the greatest grief of all; for, where he had looked for encouragement, he found only carping and opposition. But his pluck never failed him; and now the "Rocket" was upon the ground, to prove, to use his own words, "whether he was a man of his word or not."

Great interest was felt at Liverpool, as well as throughout the country, in the approaching competition. Engineers, scientific men, and mechanics arrived from all quarters, to witness the novel display of mechanical ingenuity on which such great results depended. The public generally were no indifferent spectators either. The populations of Liverpool, Manchester, and the adjacent towns felt that the successful issue of the experiment would confer upon them individual benefits and local advantages almost incalculable, while populations at a distance waited for the result with almost equal interest.

On the day appointed for the great competition of locomotives at Rainhill, the following engines were entered for the prize:

1. Messrs. Braithwaite and Ericsson's* "Novelty."
2. Mr. Timothy Hackworth's "Sanspareil."
3. Messrs. R. Stephenson & Co.'s "Rocket."
4. Mr. Burstall's "Perseverance."

Another engine was entered by Mr. Brandreth, of Liverpool—the "Cycloped," weighing three tons, worked by a horse in a frame, but it could not be admitted to the competition. The above were the only four exhibited, out of a considerable number of engines constructed in different parts of the country, in anticipation of this contest, many of which could not be satisfactorily completed by the day of trial.

The ground on which the engines were to be tried was a level piece of railroad, about two miles in length. Each was required to make twenty trips, or equal to a journey of seventy miles, in the course of the day, and the average rate of traveling was to be not under ten miles an hour. It was determined that, to avoid confusion, each engine should be tried separately, and on different days.

The day fixed for the competition was the 1st of October, but, to allow sufficient time to get the locomotives into good working order, the directors extended it to the 6th. On the morning of the 6th, the ground at Rainhill presented a lively appearance, and there was great excitement. Many thousand spectators looked on, among whom were some of the first engineers and mechanicians of the day. A stand was provided for the ladies; the "beauty and fashion" of the neighborhood were present, and the side of the railroad was lined with carriages of all descriptions.

It was quite characteristic of the Stephensons, that, although their engine did not stand first on the list for trial, it was the first that was ready, and it was accordingly ordered out by the judges for an experimental trip. Yet the "Rocket" was by no means the "favorite" with either the judges or the spectators. Nicholas Wood has

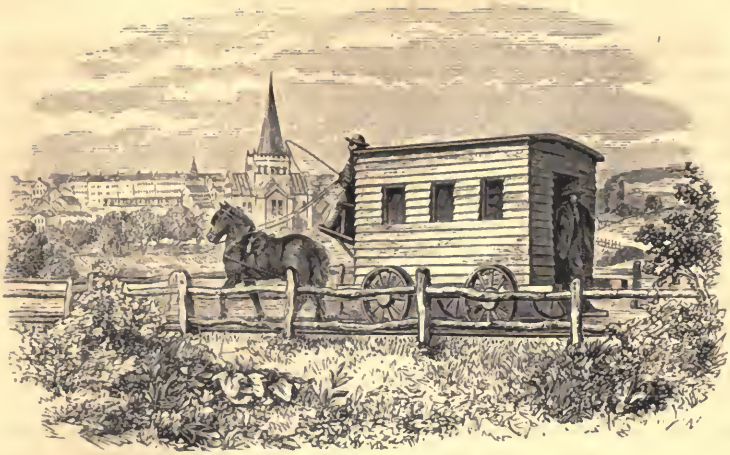
* The inventor of this engine was a Swede, who afterward came to the United States, and here achieved considerable distinction as an engineer. His caloric engine has so far proved impracticable to a large extent, but his iron cupola vessel, the "Monitor," must be admitted to have been a remarkable success in its way.

since stated that the majority of the judges were strongly predisposed in favor of the "Novelty," and that "nine tenths, if not ten tenths, of the persons present were against the 'Rocket' because of its appearance." Nearly every person favored some other engine, so that there was nothing for the "Rocket" but the practical test. The first trip made by it was quite successful. It ran about twelve miles, without interruption, in about fifty-three minutes.

The "Novelty" was next called out. It was a light engine, very compact in appearance, carrying the water and fuel upon the same wheels as the engine. The weight of the whole was only three tons and one hundred weight. A peculiarity of this engine was, that the air was driven or *forced* through the fire by means of bellows. The day being now far advanced, and some dispute having arisen as to the method of assigning the proper load for the "Novelty," no particular experiment was made farther than that the engine traversed the line by way of exhibition, occasionally moving at the rate of twenty-four miles an hour. The "Sanspareil," constructed by Mr. Timothy Hackworth, was next exhibited, but no particular experiment was made with it on this day. This engine differed but little in construction from the locomotive last supplied by the Stephensons to the Stockton and Darlington Railway, of which Mr. Hackworth was the locomotive foreman.

The contest was postponed until the following day; but, before the judges arrived on the ground, the bellows for creating the blast in the "Novelty" gave way, and it was found incapable of going through its performance. A defect was also detected in the boiler of the "Sanspareil," and some farther time was allowed to get it repaired. The large number of spectators who had assembled to witness the contest were greatly disappointed at this postponement; but, to lessen it, Stephenson again brought out the "Rocket," and, attaching to it a coach containing thirty persons, he ran them along the line at the rate of from twenty-four to thirty miles an hour, much to their gratification and amazement. Before separating, the judges ordered the engine to be in readiness by eight o'clock on the following morning, to go through its definite trial according to the prescribed conditions.

On the morning of the 8th of October, the "Rocket" was again ready for the contest. The engine was taken to the extremity of the stage, the fire-box was filled with coke, the fire lighted, and the steam raised, until it lifted the safety-valve, loaded to a pressure of fifty pounds to the square inch. This proceeding occupied fifty-seven minutes. The engine then started on its journey, dragging after it about thirteen tons' weight in wagons, and made the first ten trips backward and forward along the two miles of road, running the thirty-five miles, including stoppages, in an hour and forty-eight minutes. The second ten trips were, in like manner, performed in two hours and three minutes. The maximum velocity attained during the trial



First Railway Coach, 1825.

STOCKTON & DARLINGTON ROAD.—See page 148.

First Passenger Engine, 1829.

STEPHENSON'S PREMIUM "ROCKET."—See page 170.

trip was twenty-nine miles an hour, or about three times the speed that one of the judges of the competition had declared to be the limit of possibility. The average speed at which the whole of the journeys were performed was fifteen miles an hour, or five miles beyond the rate specified in the conditions published by the company. The entire performance excited the greatest astonishment among the assembled spectators; the directors felt confident that their enterprise was now on the eve of success; and George Stephenson rejoiced to think that, in spite of all false prophets and fickle counselors, the locomotive system was now safe. When the "Rocket," having performed all the conditions of the contest, arrived at the "grand stand," at the close of its day's successful run, Mr. Cropper—one of the directors favorable to the fixed engine system—lifted up his hands, and exclaimed, "Now has George Stephenson at last delivered himself."

Neither the "Novelty" nor the "Sanspareil" was ready for trial until the 10th, on the morning of which day an advertisement appeared, stating that the former engine was to be tried on that day, when it would perform more work than any engine on the ground. The weight of the carriages attached to it was only about seven tons. The engine passed the first post in good style; but, in returning, the pipe from the forcing-pump burst and put an end to the trial. The pipe was afterward repaired, and the engine made several trips by itself, in which it was said to have gone at the rate of from twenty-four to twenty-eight miles an hour.

The "Sanspareil" was not ready until the 13th; and when its boiler and tender were filled with water, it was found to weigh four hundred weight beyond the weight specified in the published conditions as the limit of four-wheeled engines; nevertheless, the judges allowed it to run on the same footing as the other engines, to enable them to ascertain whether its merits entitled it to favorable consideration. It traveled at the average speed of about fourteen miles an hour, with its load attached; but at the eighth trip the cold-water pump got wrong, and the engine could proceed no farther.

It was determined to award the premium to the successful engine on the following day, the 14th, on which occasion there was an unusual assemblage of spectators. The owners of the "Novelty" pleaded for another trial, and it was conceded. But again it broke down. Then Mr. Hackworth requested an opportunity for making another trial of his "Sanspareil." But the judges had now had enough of failures, and they declined, on the ground that not only was the engine above the stipulated weight, but that it was constructed on a plan which they could not recommend for adoption by the directors of the company. One of the principal practical objections to this locomotive was the enormous quantity of coke consumed or wasted by it—about 692 lbs. per hour, when traveling—caused by the

sharpness of the steam-blast in the chimney, which blew a large proportion of the burning coke into the air.

The "Perseverance" of Mr. Burstall was found unable to move at more than five or six miles an hour, and it was withdrawn from the contest at an early period. The "Rocket" was thus the only engine that had performed, and more than performed, all the stipulated conditions, and it was declared to be entitled to the prize of 500*l.*, which was awarded to the Messrs. Stephenson and Booth accordingly. And farther, to show that the engine had been working quite within its powers, George Stephenson ordered it to be brought upon the ground and detached from all incumbrances, when, in making two trips, it was found to travel at the astonishing rate of thirty-five miles an hour.

The "Rocket" had thus eclipsed the performances of all locomotive engines that had yet been constructed, and outstripped even the sanguine expectations of its constructors. It satisfactorily answered the report of Messrs. Walker and Rastrick, and established the efficiency of the locomotive for working the Liverpool and Manchester Railway, and, indeed, all future railways. The "Rocket" showed that a new power had been born into the world, full of activity and strength, with boundless capability of work. It was the simple but admirable contrivance of the steam-blast, and its combination with the multitubular boiler, that at once gave locomotion a vigorous life, and secured the triumph of the railway system.* As has been well observed, this wonderful ability to increase and multiply its powers of performance with the emergency that demands them has made this giant engine the noblest creation of human wit, the very lion among machines. The success of the Rainhill experiment, as judged by the public, may be inferred from the fact that the shares of the company immediately rose ten per cent, and nothing farther was heard of the proposed twenty-one fixed engines, engine-houses, ropes, etc. All this cumbersome apparatus was thenceforward effectually disposed of.

* When heavier and more powerful engines were brought upon the road, the old "Rocket," becoming regarded as a thing of no value, was sold in 1837. It was purchased by Mr. Thompson, of Kirkhouse, the lessee of the Earl of Carlisle's coal and lime works, near Carlisle. He worked the engine on the Midgeholme Railway for five or six years, during which it hauled coals from the pits to the town. There was wonderful vitality in the old engine. When the great contest for the representation of East Cumberland took place, and Sir James Graham was superseded by Major Aglionby, the "Rocket" was employed to convey the Alston express with the state of the poll from Midgeholme to Kirkhouse. On that occasion the engine was driven by Mr. Mark Thompson, and it ran the distance of upward of four miles in four and a half minutes, thus reaching a speed of nearly sixty miles an hour, proving its still admirable qualities as an engine. But again it was superseded by heavier engines; for it only weighed about four tons, whereas the new engines were at least three times that weight. The "Rocket" was consequently laid up in ordinary in the yard at Kirkhouse, from whence it has since been transferred to the Museum of Patents at Kensington, where it is still to be seen.

Very different now was the tone of those directors who had distinguished themselves by the persistency of their opposition to George Stephenson's plans. Coolness gave way to eulogy, and hostility to unbounded offers of friendship, after the manner of many men who run to the help of the strong. Deeply though the engineer had felt, aggrieved by the conduct exhibited toward him, during this eventful struggle, by some from whom forbearance was to have been expected, he never entertained toward them in after-life any angry feelings; on the contrary, he forgave all. But, though the directors afterward passed unanimous resolutions eulogizing "the great skill and unwearied energy" of their engineer, he himself, when speaking confidentially to those with whom he was most intimate, could not help pointing out the difference between his "foul-weather and fair-weather friends." Mr. Gooch says that, though naturally most cheerful and kind-hearted in disposition, the anxiety and pressure which weighed upon his mind during the construction of the railway had the effect of making him occasionally impatient and irritable, like a spirited horse touched by the spur, though his original good-nature from time to time shone through it all. When the line had been brought to a successful completion, a very marked change in him became visible. The irritability passed away, and when difficulties and vexations arose, they were treated by him as matters of course, and with perfect com posure and cheerfulness.

OPENING OF THE LIVERPOOL AND MANCHESTER RAILWAY, AND EXTENSION OF THE RAILWAY SYSTEM.

The directors of the railway now began to see daylight, and they derived encouragement from the skillful manner in which their engineer had overcome the principal difficulties of the undertaking. He had formed a solid road over Chat Moss, and thus achieved one "impossibility;" and he had constructed a locomotive that could run at a speed of thirty miles an hour, thus vanquishing a still more formidable difficulty.

A single line of way was completed over Chat Moss by the first of January, 1830, and on that day the "Rocket," with a carriage full of directors, engineers, and their friends, passed along the greater part of the road between Liverpool and Manchester. Mr. Stephenson continued to direct his close attention to the improvement of the details of the locomotive, every successive trial of which proved more satisfactory. In this department he had the benefit of the able and unremitting assistance of his son, who, in the workshops at Newcastle, directly superintended the construction of the engines required for the working of the railway. He did not by any means rest satisfied with the success, decided though it was, which had been achieved by the "Rocket." He regarded it but in the light of a successful experiment; and every successive engine placed upon the railway exhib-

ited some improvement on its predecessors. The arrangement of the parts, and the weight and proportion of the engines, were altered as the experience of each successive day, or week, or month suggested; and it was soon found that the performances of the "Rocket," on the day of trial, had been greatly within the powers of the improved locomotive.

The first entire trip between Liverpool and Manchester was performed on the 14th of June, 1830, on the occasion of a board meeting being held at the latter town. The train was on this occasion drawn by the "Arrow," one of the new locomotives, in which the most recent improvements had been adopted. George Stephenson himself drove the engine, and Captain Scoresby, the circumpolar navigator, stood beside him on the foot-plate, and minuted the speed of the train. A great concourse of people assembled at both termini, as well as along the line, to witness the novel spectacle of a train of carriages drawn by an engine at the speed of seventeen miles an hour. On the return journey to Liverpool, in the evening, the "Arrow" crossed Chat Moss at a speed of nearly twenty-seven miles an hour, reaching its destination in about an hour and a half.

In the mean time, Mr. Stephenson, and his assistant, Mr. Gooch, were diligently occupied in making the necessary preliminary arrangements for the conduct of the traffic against the time when the line should be ready for opening. The experiments made with the object of carrying on the passenger traffic at quick velocities were of an especially harassing and anxious character. Every week, for nearly three months before the opening, trial trips were made to Newton and back, generally with two or three trains following each other, and carrying altogether from two to three hundred persons. These trips were usually made on Saturday afternoons, when the works could be more conveniently stopped and the line cleared for the occasion. In these experiments, Mr. Stephenson had the able assistance of Mr. Henry Booth, the secretary of the company, who contrived many of the arrangements in the passenger carriages, not the least valuable of which was his invention of the coupling screw, still in use on all passenger railways.

At length the line was finished and ready for the public opening, which took place on the 15th of September, 1830, and attracted a vast number of spectators from all parts of the country. The completion of the railway was justly regarded as an important national event, and the ceremony of its opening was celebrated accordingly. The Duke of Wellington, then Prime Minister, Sir Robert Peel, Secretary of State, Mr. Huskisson, one of the members for Liverpool, and an earnest supporter of the project from its commencement, were among the number of distinguished public personages present.

Eight locomotive engines, constructed at the Stephenson works, had been delivered and placed upon the line, the whole of which had been tried and tested, weeks before, with perfect success. The several trains of carriages accommodated in all about six hundred per-

sons. The "Northumbrian" engine, driven by George Stephenson himself, headed the line of trains; then followed the "Phœnix," driven by Robert Stephenson; the "North Star," by Robert Stephenson, senior (brother of George); the "Rocket," by Joseph Locke; the "Dart," by Thomas L. Gooch; the "Comet," by William Allcard; the "Arrow," by Frederick Swanwick; and the "Meteor," by Anthony Harding. The procession was cheered in its progress by thousands of spectators—through the deep ravine of Olive Mount; up the Sutton incline; over the Sankey viaduct, beneath which a multitude of persons had assembled—carriages filling the narrow lanes, and barges crowding the river; the people below gazing with wonder and admiration at the trains which sped along the line, far above their heads, at the rate of some twenty-four miles an hour.

At Parkside, about seventeen miles from Liverpool, the engines stopped to take in water. Here a deplorable accident occurred to one of the illustrious visitors, which threw a deep shadow over the subsequent proceedings of the day. The "Northumbrian" engine, with the carriage containing the Duke of Wellington, was drawn up on one line, in order that the whole of the trains on the other line might pass in review before him and his party. Mr. Huskisson had alighted from the carriage, and was standing on the opposite road, along which the "Rocket" was observed rapidly coming up. At this moment the Duke of Wellington, between whom and Mr. Huskisson some coolness had existed, made a sign of recognition, and held out his hand. A hurried but friendly grasp was given; and before it was loosened there was a general cry from the by-standers of "Get in, get in!" Flurried and confused, Mr. Huskisson endeavored to get round the open door of the carriage, which projected over the opposite rail, but in so doing he was struck down by the "Rocket," and falling with his leg doubled across the rail, the limb was instantly crushed. His first words, on being raised, were, "I have met my death," which unhappily proved true, for he expired that same evening in the parsonage of Eccles. It was cited, at the time, as a remarkable fact, that the "Northumbrian" engine, driven by George Stephenson himself, conveyed the wounded body of the unfortunate gentleman a distance of about fifteen miles in twenty-five minutes, or at the rate of *thirty-six miles an hour*. This incredible speed burst upon the world with the effect of a new and unlooked-for phenomenon.

The accident threw a gloom over the rest of the day's proceedings. The Duke of Wellington and Sir Robert Peel expressed a wish that the procession should return to Liverpool. It was, however, represented to them that a vast concourse of people had assembled at Manchester to witness the arrival of the trains; that report would exaggerate the mischief, if they did not complete the journey; and that a false panic on that day might seriously affect future railway traveling, and the value of the company's property. The party consented ac-

cordingly to proceed to Manchester, but on the understanding that they should return as soon as possible, and refrain from farther festivity. . . . . .

On the trains coming to a stand in the Manchester station, the duke did not descend, but remained seated, shaking hands with the women and children, who were pushed forward by the crowd. Shortly after, the trains returned to Liverpool, which they reached after considerable delays, late at night.

On the following morning, the railway was opened for public traffic. The first train of 140 passengers was booked and sent on to Manchester, reaching it in the allotted time of two hours; and from that time the traffic has regularly proceeded from day to day until now.

It is scarcely necessary that we should speak at any length of the commercial results of the Liverpool and Manchester Railway. Suffice it to say that its success was complete and decisive. The anticipations of its projectors were, however, in many respects at fault. They had based their calculations almost entirely on the heavy merchandise traffic—such as coal, cotton, and timber—relying little upon passengers; whereas, the receipts derived from the conveyance of passengers far exceeded those derived from merchandise of all kinds, which for a time continued a subordinate branch of the traffic. . .

For some time after the public opening of the line, Mr. Stephenson's ingenuity continued to be employed in devising improved methods for securing the safety and comfort of the traveling public. Few are aware of the thousand minute details which have to be arranged—the forethought and contrivance that have to be exercised—to enable the traveler by railway to accomplish his journey in safety. After the difficulties of constructing a level road over bogs, across valleys, and through deep cuttings have been overcome, the maintenance of the way has to be provided for with continuous care. Every rail, with its fastenings, must be complete, to prevent risk of accident, and the road must be kept regularly ballasted up to the level, to diminish the jolting when passing over it at high speed. Then the stations must be protected by signals, observable from such a distance as to enable the train to be stopped in event of an obstacle, such as a stopping or shunting train being in the way. For some years the signals employed on the Liverpool Railway were entirely given by men with flags of different colors stationed along the line; there were no fixed signals nor electric telegraphs; but the traffic was nevertheless worked quite as safely as under the more elaborate and complicated system of telegraphing which has since been established.

For the purpose of stopping the train, brakes on an improved plan were contrived, with new modes of lubricating the carriage-axles, on which the wheels revolved at an unusually high velocity. In all these contrivances Mr. Stephenson's inventiveness was kept constantly on the stretch; and though many improvements in detail have been

effected since his time, the foundations were then laid by him of the present system of conducting railway traffic. As a curious illustration of the inventive ingenuity which he displayed in contriving the working of the Liverpool line, we may mention his invention of the Self-acting Brake. He early entertained the idea that the momentum of the running train might itself be made available for the purpose of checking its speed. He proposed to fit each carriage with a brake, which should be called into action immediately on the locomotive at the head of the train being pulled up. The impetus of the carriage carrying them forward, the buffer-springs would be driven home, and, at the same time, by a simple arrangement of the mechanism, the brakes would be called into simultaneous action; thus the wheels would be brought into a state of sledge, and the train speedily stopped. This plan was adopted by Mr. Stephenson before he left the Liverpool and Manchester Railway, though it was afterward discontinued; and it is a remarkable fact, that this identical plan, with the addition of a centrifugal apparatus, was recently revived by M. Guerin, a French engineer, and extensively employed on foreign railways.

Finally, Mr. Stephenson had to attend to the improvement of the power and speed of the locomotive, with a view to economy as well as regularity in the working of the railway. In the "Planet" engine, delivered upon the line immediately subsequent to the public opening, all the improvements which had up to this time been contrived by him and his son were introduced in combination—the blast-pipe, the tubular boiler, horizontal cylinders inside the smoke-box, the cranked axle, and the fire-box firmly fixed to the boiler. The first load of goods conveyed from Liverpool to Manchester by the "Planet" was eighty tons in weight, and the engine performed the journey against a strong head wind in two hours and a half. On another occasion, the same engine brought up a cargo of voters from Manchester to Liverpool, during a contested election, within a space of sixty minutes. The "Samson," in the following year, exhibited still farther improvements, the most important of which was that of *coupling* the fore and hind wheels of the engine. By this means the adhesion of the wheels on the rails was more effectually secured, and thus the full hauling power of the locomotive was made available. The "Samson," shortly after it was placed upon the line, dragged after it a train of cars, weighing a hundred and fifty tons, at a speed of about twenty miles an hour, the consumption of coke being reduced to about a third of a pound per ton per mile.

The rapid progress thus made will show that the inventive faculties of Mr. Stephenson and his son were kept fully on the stretch; but their labors were amply repaid by the result. They were, doubtless, to some extent, stimulated by the number of competitors who about the same time appeared as improvers of the locomotive engine. But the superiority of Stephenson's locomotives over all others that had

yet been tried induced the directors of the railway to require that the engines supplied to them by other builders, should be constructed after the same model. Mr. Stephenson himself always had the greatest faith in the superiority of his own engines over all others, and did not hesitate strongly to declare it. When it was once proposed to introduce the engines of another maker on the Manchester and Leeds line, he said, "Very well; I have no objection; but put them to this fair test. Hang one of ——'s engines on to one of mine, back to back. Then let them go at it; and whichever walks away with the other, *that's the engine.*"

Stephenson's mechanics were in request all over England—the Newcastle workshops continuing for many years to perform the part of a training-school for engineers, and to supply locomotive superintendents and drivers, not only for England, but for nearly every country in Europe—preference being given to them by the directors of railways, in consequence of their previous training and experience, as well as because of their generally excellent qualities as steady and industrious workmen.

The success of the Liverpool and Manchester experiment naturally excited great interest. People flocked to Lancashire from all quarters to see the steam-coach running upon a railway at three times the speed of a mail-coach, and to enjoy the excitement of actually traveling in the wake of an engine at that incredible velocity. The travelers returned to their respective districts full of the wonders of the locomotive, considering it to be the greatest marvel of the age. Railways are familiar enough objects now, and our children who grow up in their midst may think little of them; but thirty years since, it was an event in one's life to see a locomotive, and to travel for the first time upon a public railroad.

The practicability of railway locomotion being now proved, and its great social and commercial advantages ascertained, the extension of the system was merely a question of time, money, and labor. Although the Legislature took no initiative step in the direction of railway extension, the public spirit and enterprise of the country did not fail it at this juncture. The English people, though they may be defective in their capacity for organization, are strong in individualism, and not improbably their admirable qualities in the latter respect detract from their efficiency in the former. Thus, in all times, their greatest national enterprises have not been planned by officials, and carried out upon any regular system, but have sprung, like their Constitution, their laws, and their entire industrial arrangements, from the force of circumstances and the individual energies of the people. Hence railway extension, like so many other great English enterprises, was now left to be carried out by the genius of English engineers, backed by the energy of the British public.

The mode of action was characteristic and national. The execution of the new lines was undertaken entirely by joint-stock associa-

tions of proprietors, after the manner of the Stockton and Darlington, and Liverpool and Manchester companies.

Mr. Stephenson was, of course, actively engaged in the construction of numerous railways now projected. During the formation of the Manchester line, he had been consulted respecting many similar projects. The commercial results of the Manchester line greatly exceeded the expectations of its projectors. Now, that the practicability of working it by locomotive power had been proved, it was as easy for engineers to make railways, and to work them, as it was for navigators to find America after Columbus had made the first voyage.

When it was proposed to extend the advantages of railways to the population of the midland and southern counties of England, an immense amount of alarm was created in the minds of the country gentlemen. They did not relish the idea of private individuals, principally residents in the manufacturing districts, invading their domains, and they every-where rose up in arms against the "new-fangled roads." Colonel Sibthorpe openly declared his hatred of the "infernal railroads," and said that he "would rather meet a highwayman, or see a burglar on his premises, than an engineer!" Mr. Berkeley, the member for Cheltenham, at a public meeting in that town, re-echoed Colonel Sibthorpe's sentiments, and "wished that the concoctors of every such scheme, with their solicitors and engineers, were at rest in Paradise!" The impression prevailed among the rural classes that fox-covers and game-preserves would be seriously prejudiced by the formation of railroads; that agricultural communications would be destroyed, land thrown out of cultivation, landowners and farmers reduced to beggary, the poor-rates increased through the number of persons thrown out of employment by the railways, and all this in order that Liverpool, Manchester, and Birmingham shop-keepers and manufacturers might establish a monstrous monopoly in railway traffic.

The inhabitants of even some of the large towns were thrown into a state of consternation by the proposal to provide them with the accommodation of a railway. The line from London to Birmingham would naturally have passed close to the handsome town of Northampton, and was so projected. But the inhabitants of the place, urged on by the local press, and excited by men of influence and education, opposed the project, and succeeded in forcing the promoters, in their survey of the line, to pass the town at a distance. The necessity was thus involved of distorting the line, by which the enormous expense of constructing the Kilsby Tunnel was incurred. Not many years elapsed before the inhabitants of Northampton became clamorous for railway accommodation, and a special branch was constructed for them. The additional cost involved by this forced deviation of the line could not have amounted to less than half a million sterling; the loss falling, not upon the shareholders only, but

upon the public. Other towns in the south followed the example of Northampton in howling down the railways.

Mr. Stephenson was asked to undertake the office of engineer of the Leicester and Swannington Railway, but his answer was that he had thirty miles of railway in hand, which was enough for any engineer to attend to properly. Was there any person he could recommend? "Well," said he, "I think my son Robert is competent to undertake the thing." Would Mr. Stephenson be answerable for him? Oh, yes, certainly." And Robert Stephenson, at twenty-seven years of age, was installed engineer of the line.

While the road was in progress, Robert kept up a regular correspondence with his father at Liverpool, consulting him on all points in which his greater experience was likely to be of service. Like his father, Robert was very observant, and always ready to seize opportunity by the forelock. It happened that the estate of Snibston, near Ashby-de-la-Zouch, was advertised for sale, and the young engineer's experience as a coal-viewer and practical geologist suggested to his mind that coal was most probably to be found underneath. He communicated his views to his father on the subject. The estate lay in the immediate neighborhood of the railway; and if the conjecture proved correct, the finding of the coal must necessarily prove a most fortunate circumstance for the purchasers of the land. He accordingly requested his father to come over to Snibston and look at the property, which he did; and after a careful inspection of the ground, he arrived at the same conclusion as his son.

The large manufacturing town of Leicester, about fourteen miles distant, had, up to that time, been exclusively supplied with coal brought by canal from Derbyshire, and the Stephensons saw that the railway under construction from Swannington to Leicester would furnish a ready market for any coals which might be found at Snibston. Having induced two of his Liverpool friends to join him in the venture, the Snibston estate was purchased in 1831, and, shortly after, Stephenson removed his home from Liverpool to Alton Grange, for the purpose of superintending the sinking of the pit.

The works were opened out on a large scale, and George Stephenson had the pleasure and good fortune to send the first train of main coal to Leicester by railway. The price was immediately reduced there to about 8*s.* a ton, effecting a pecuniary saving to the inhabitants of the town of about 40,000*l.* per annum, or equivalent to the whole amount then collected in government taxes and local rates, besides giving an impetus to the manufacturing prosperity of the place, which has continued to the present day. The correct principles upon which the mining operations at Snibston were conducted offered a salutary example to the neighboring colliery owners. The numerous improvements there introduced were freely exhibited to all, and they were afterward reproduced in many forms all over the Midland Counties, greatly to the advantage of the mining interest.

Mr. Stephenson was attentive to the comfort and well-being of those immediately dependent upon him—the work-people of his colliery and their families. Unlike many large employers who have "sprung from the ranks," he was one of the kindest and most indulgent of masters. He would have a fair day's work for a fair day's wages, but he never forgot that the employer had his duties as well as his rights. First of all, he attended to the proper home accommodation of his work-people. He erected a village of comfortable cottages, each provided with a snug little garden. He was also instrumental in erecting a church adjacent to the works, as well as Church schools for the education of the colliers' children; and with that broad catholicity of sentiment which distinguished him, he farther provided a chapel and a school-house for the use of the dissenting portion of the colliers and their families—an example of benevolent liberality which was not without a salutary influence upon the neighboring employers.

ROBERT STEPHENSON CONSTRUCTS THE LONDON AND BIRMINGHAM RAILWAY.

Of the extensive projects which followed close upon the completion of the Liverpool and Manchester line, that of a railway between London and Birmingham was the most important. The scheme originated in 1830. Two plans were proposed. One to London by way of Oxford, and the other by Coventry. They resolved to call George Stephenson to their aid, and requested him to advise them as to the two schemes. After a careful examination, Stephenson reported in favor of the Coventry route. The Lancashire gentlemen, who were the principal subscribers, supported his decision, and that line was adopted.

At the meeting of gentlemen, held at Birmingham, to determine the appointment of engineer, there was a strong party in favor of associating with Stephenson a gentleman with whom he had been brought into serious collision. When the offer was made to him, he requested leave to retire and consider the proposal with his son. The father was in favor of accepting it. His struggle heretofore had been so hard that he could not bear the idea of missing so promising an opportunity of professional advancement. But the son, foreseeing the jealousies and heartburnings which it would most probably create, recommended his father to decline. George adopted the suggestion, and, returning to the committee, he announced his decision, on which they decided to appoint him in conjunction with his son.. . . .

Public meetings were held in all the counties through which the line would pass, at which the project was denounced, and strong resolutions against it were passed. Robert Stephenson, describing the opposition, said, "We called one day on Sir Astley Cooper, the eminent surgeon, in hope of overcoming his aversion to the railway.

He was one of our most inveterate and influential opponents. His country house at Berkhamstead was situated near the intended line, which passed through part of his property. We found a courtly, fine-looking old gentleman, of very stately manners, who received us kindly, and heard all we had to say in favor of the project. But he was quite inflexible in his opposition to it. No deviation or improvement that we could suggest had any effect in conciliating him. He was opposed to railways generally, and to this in particular. 'Your scheme,' said he, 'is preposterous in the extreme. It is of so extravagant a character as to be positively absurd. Then look at the recklessness of your proceedings! You are proposing to cut up our estates in all directions for the purpose of making an unnecessary road. Do you think for one moment of the destruction of property involved by it? Why, gentlemen, if this sort of thing be permitted to go on, you will in a very few years *destroy the noblesse!*' We left the honorable baronet without having produced the slightest effect upon him, excepting, perhaps, it might be, increased exasperation against our scheme. I could not help observing to my companions as we left the house, 'Well, it is really provoking to find one who has been made a "Sir" for cutting that wen out of George the Fourth's neck, charging us with contemplating the destruction of the *noblesse*, because we propose to confer upon him the benefits of a railroad.'"

Such being the opposition of the owners of land, it was with the greatest difficulty that an accurate survey of the line could be made. An instructive commentary on the mode by which these noble lords and influential landed proprietors were finally "conciliated" was found in the simple fact that the estimate for land was nearly trebled, and that the owners were paid about 750,000*l.* for what had been originally estimated at 250,000*l.* The total expenses of carrying the bill through Parliament amounted to the enormous sum of 72,868*l.*

Robert Stephenson was, with his father's sanction, appointed engineer-in-chief of the line, at a salary of 1,500*l.* a year. He was now a married man, having become united to Miss Frances Sanderson in 1829, since which his home had been at Newcastle, near to the works there; but, on receiving his new appointment, he removed with his wife to London, to a house on Haverstock Hill, where he resided during the execution of the Birmingham Railway.

The difficulties encountered in the construction of this railway were very great, the most formidable of them originating in the character of the work. Extensive tunnels had to be driven through unknown strata, and miles of underground excavation had to be carried out in order to form a level road from valley to valley under the intervening ridges. This kind of work was the newest of all to the contractors of that day. Robert Stephenson's experience in the collieries of the North rendered him well fitted to grapple with such difficulties; yet even he, with all his practical knowledge, could scarcely have forseen the serious obstacles which he was called upon to encounter.

The magnitude of the works, which were unprecedented in England, was one of the most remarkable features in the undertaking. The following striking comparison has been made between this railway and one of the greatest works of ancient times. The great Pyramid of Egypt was, according to Diodorus Siculus, constructed by three hundred thousand—according to Herodotus, by one hundred thousand—men. It required for its execution twenty years, and the labor expended upon it has been estimated as equivalent to lifting 15,733,000,000 of cubic feet of stone one foot high; whereas, if the labor expended in constructing the London and Birmingham Railway be in like manner reduced to one common denomination, the result is 25,000,000,000 of cubic feet *more* than was lifted for the Great Pyramid; and yet the English work was performed by about 20,000 men in less than five years. And while the Egyptian work was executed by a powerful monarch concentrating upon it the labor and capital of a great nation, the English railway was constructed, in the face of every conceivable obstruction and difficulty, by a company of private individuals out of their own resources, without the aid of government or the contribution of one farthing of public money.

The laborers who executed these formidable works were in many respects a remarkable class. The "railway navvies,"* as they were called, were men drawn by the attraction of good wages from all parts of the kingdom; and they were ready for any sort of hard work. Many of the laborers employed on the Liverpool line were Irish; others were from the Northumberland and Durham railways, where they had been accustomed to similar work; and some of the best came from the fen districts of Lincoln and Cambridge, where they had been trained to execute works of excavation and embankment. These old practitioners formed a nucleus of skilled manipulation and aptitude which rendered them of indispensable utility in the immense undertakings of the period. Their expertness in all sorts of earthwork, in embanking, boring, and well-sinking—their practical knowledge of the nature of soils and rocks, the tenacity of clays, and the porosity of certain stratifications—were very great; and, rough-looking as they were, many of them were as important in their own department as the contractor or the engineer.

During the railway-making period the navvy wandered about from one public work to another, apparently belonging to no country and having no home. He usually wore a white felt hat, with the brim turned up, a velveteen or Jean square-tailed coat, a scarlet plush waistcoat with little black spots, and a bright-colored kerchief round his Herculean neck, when, as often happened, it was not left entirely bare. His corduroy breeches were retained in position by a leathern strap round the waist, and were tied and buttoned at the knee, dis-

*The word "navvy," or "navigator," is supposed to have originated in the fact of many of these laborers having been originally employed in making the navigations, or canals, the construction of which immediately preceded the railway era.

playing beneath a solid calf and foot incased in strong, high-laced boots. Joining together in a "butty gang," some ten or twelve of these men would take a contract to cut out and remove so much "dirt"—as they denominated earth-cutting—fixing their price according to the character of the "stuff," and the distance to which it had to be wheeled and tipped. The contract taken, every man put himself to his metal; if any was found skulking, or not putting forth his full working power, he was ejected from the gang. Their powers of endurance were extraordinary. In times of emergency, they would work for twelve and even sixteen hours, with only short intervals for meals. The quantity of flesh meat which they consumed was something enormous; but it was to their bones and muscles what coke is to the locomotive—the means of keeping up the steam. They displayed great pluck, and seemed to disregard peril. Indeed, the most dangerous sort of labor—such as working horse-barrow runs, in which accidents are of constant occurrence—has always been most in request among them, the danger seeming to be one of its chief recommendations.

Working together, eating, drinking, and sleeping together, and daily exposed to the same influences, these railway laborers soon presented a distinct and well-defined character, strongly marking them from the population of the districts in which they labored. Reckless alike of their lives as of their earnings, the navvies worked hard and lived hard. For their lodgings, a hut of turf would content them; and, in their hours of leisure, the meanest public house would serve for their parlor. Unburdened, as they usually were, by domestic ties, unsoftened by family affection, and without much moral or religious training, the navvies came to be distinguished by a sort of savage manners, which contrasted strangely with those of the surrounding population. Yet, ignorant and violent though they might be, they were usually good-hearted fellows in the main—frank and open-handed with their comrades, and ready to share their last penny with those in distress. Their pay-nights were often a saturnalia of riot and disorder, dreaded by the inhabitants of the villages along the line of works. The irruption of such men into the quiet hamlet of Kilsby must, indeed, have produced a very startling effect on the recluse inhabitants of the place. Robert Stephenson used to tell a story of the clergyman of the parish waiting upon the foreman of one of the gangs to expostulate with him as to the shocking impropriety of his men working during Sunday. But the head navvy merely hitched up his trowsers and said, "Why, Soondays hain't cropt out here yet!" In short, the navvies were little better than heathens, and the village of Kilsby was not restored to its wonted quiet until the tunnel-works were finished, and the engines and scaffolding removed, leaving only the immense masses of *débris* around the line of shafts which extend along the top of the tunnel.

MIDLAND RAILWAY—STEPHENSON'S LIFE AT ALTON—VISIT TO BELGIUM —GENERAL EXTENSION OF RAILWAYS AND THEIR RESULTS.

The rapidity with which railways were carried out, when the spirit of the country became roused, was indeed remarkable. This was doubtless in some measure owing to the increased force of the current of speculation at the time, but chiefly to the desire which the public began to entertain for the general extension of the system. It was even proposed to fill up the canals and convert them into railways. The new roads became the topic of conversation in all circles; they were felt to give a new value to time; their vast capabilities for "business" peculiarly recommended them to the trading classes, while the friends of "progress" dilated on the great benefits they would eventually confer upon mankind at large. It began to be seen that Edward Pease had not been exaggerating when he said, "Let the country but make the railroads, and the railroads will make the country!" They also came to be regarded as inviting objects of investment to the thrifty, and a safe outlet for the accumulations of inert men of capital. Thus new avenues of iron road were soon in course of formation, branching in all directions, so that the country promised, in a wonderfully short space of time, to become wrapped in one vast network of iron.

The Midland Railway was a favorite line of Mr. Stephenson's. It passed through a rich mining district, with valuable coal-fields, and it formed part of the main line between London and Edinburgh. Although one of the many great works, it was enough of itself to be the achievement of a life. Compare it with Napoleon's military road over the Simplon, and it will at once be seen how greatly it excels that work, not only in the constructive skill displayed, but also in cost and magnitude, and the amount of labor employed. The road of the Simplon is 45 miles in length; the North Midland, 72½ miles. The former has 50 bridges and 5 tunnels, measuring together 1,338 feet in length; the latter has 200 bridges and 7 tunnels, measuring together 11,400 feet, or about 2¼ miles. The former cost about 720,000*l.* sterling, the latter above 3,000,000*l.* Napoleon's grand military road was constructed in six years, at the public cost of the two great kingdoms of France and Italy, while Stephenson's railway was formed in about three years, by a company of private merchants and capitalists, out of their own funds and under their own superintendence.

It is scarcely necessary that we should give any account in detail of the North Midland works. The making of one tunnel so much resembles the making of another—the building of bridges and viaducts, no matter how extensive, so much resembles the building of others—the cutting out of "dirt," the blasting of rocks, and the wheeling of excavation into embankments, is so much matter of mere time and

hard work, that it is quite unnecessary to detain the reader by any attempt at their description. Of course there were the usual difficulties to encounter and overcome, but the engineer regarded these as matters of course, and would probably have been disappointed if they had not presented themselves.

George Stephenson, when out on foot in the field, was ever foremost, and delighted to test the prowess of his companions by a good jump at any hedge or ditch that lay in their way. His companions used to remark his singular quickness of observation. Nothing escaped his attention—the trees, the crops, the birds, or the farmer's stock; and he was usually full of lively conversation, making some striking remark or propounding some ingenious theory. When taking a flying survey of a new line, he rapidly noted the general face of the country, and inferred its Geological structure. He once remarked to a friend, "I have planned many a railway traveling along in a post-chaise." His first impressions of the direction to be taken almost invariably proved correct; and there are few of the lines recommended by him which have not been executed. As an illustration of his quick and shrewd observation we may mention that, when employed to lay out a line to connect Manchester with the Potteries, the gentleman who accompanied him cautioned him to provide large accommodation for carrying off the water, observing, "You must not judge by the appearance of the brooks; for after heavy rains these hills pour down volumes of water." "Pooh! pooh! *don't I see your bridges?*" replied the engineer.

While occupied in carrying out great railway undertakings which we have not even named, George Stephenson's home continued, for the greater part of the time, to be at Alton Grange, near Leicester. But he was so much occupied in traveling about from one committee of directors to another—one week in England, another in Scotland, and probably the next in Ireland, that he often did not see his home for weeks together. He also made frequent inspections of various important and difficult works in progress, especially on the Midland and Manchester and Leeds lines, besides occasionally going to Newcastle to see how the locomotive works were going on there. During the three years ending 1837—perhaps the busiest years of his life*—he traveled by post-chaise alone upward of 20,000 miles, and yet not less than six months out of the three years were spent in London. Hence there is comparatively little to record of Mr. Stephenson's

* During this period, he was engaged on the North Midland, from Derby to Leeds; the York and North Midland, from Normanton to York; the Manchester and Leeds; the Birmingham and Derby, and the Sheffield and Rotherham Railways; the whole of these, of which he was principal engineer, having been authorized in 1836. In that session arrangements were made for the construction of 214 miles of new railways under his direction, at an expenditure of upwards of five millions sterling.

private life at this period, during which he had scarcely a moment that he could call his own.

To give an idea of the number of his projects, and of the extent and rapidity of his journeys, we subjoin from his private secretary's journal the following epitome of one journey in 1836, which will indicate his great application to business:

"August 9th. From Alton Grange to Derby and Matlock, and forward by mail to Manchester, to meet the committee of the South Union Railway. August 10th. Manchester to Stockport, to meet committee of the Manchester and Leeds Railway; thence to meet directors of the Chester and Birkenhead, and Chester and Crewe Railways. August 11th. Liverpool to Woodside, to meet committee of the Chester and Birkenhead line; journey with them along the proposed railway to Chester; then back to Liverpool. August 12th. Liverpool to Manchester, to meet directors of the Manchester and Leeds Railway, and traveling with them over the works in progress. August 13th. Continued journey over the works, and arrival at Wakefield; thence to York. August 14th. Meeting with Mr. Hudson at York, and journey from York to Newcastle. August 15th. At Newcastle, working up arrears of correspondence. August 16th. Meeting with Mr. Brandling as to the station for the Brandling Junction at Gateshead, and stations at other parts of the line. August 17th. Carlisle to Wigton and Maryport, examining the railway. August 19th. Maryport to Carlisle, continuing the inspection. August 20th. At Carlisle, examining the ground for a station; and working up correspondence. August 21st. Carlisle to Dumfries by mail; forward to Ayr by chaise, proceeding up the valley of the Nith, through Thornhill, Sanquhar, and Cumnock. August 22d. Meeting with promoters of the Glasgow, Kilmarnock, and Ayr Railway, and journey along the proposed line; meeting with the magistrates of Kilmarnock at Beith, and journey with them over Mr. Gale's proposed line to Kilmarnock. August 23d. From Kilmarnock along Mr. Miller's proposed line to Beith, Paisley, and Glasgow. August 24th. Examination of site of proposed station at Glasgow; meeting with the directors; then from Glasgow, by Falkirk and Linlithgow, to Edinburgh, meeting there with Mr. Grainger, engineer, and several of the committee of the proposed Edinburgh and Dunbar Railway. August 25th. Examining the site of the proposed station at Edinburgh, then to Dunbar, by Portobello and Haddington, examining the proposed line of railway. August 26th. Dunbar to Tommy Grant's, to examine the summit of the country toward Berwick, with a view to a through line to Newcastle; then return to Edinburgh. August 27th. At Edinburgh, meeting the provisional committee of the proposed Edinburgh and Dunbar Railway. August 28th. Journey from Edinburgh, through Melrose and Jedburg, to Horsley, along the route of Mr. Richardson's proposed railway across Carter Fell. August 29th. From Horsley to Mr. Brandling's, then on to New-

castle; engaged on the Brandling Junction Railway. August 30th. Engaged with Mr. Brandling; after which, meeting a deputation from Maryport. August 31st. Meeting with Mr. Brandling and others as to the direction of the Brandling Junction in connection with the Great North of England line, and the course of the railway through Newcastle; then on to York. September 1st. At York; meeting with York and North Midland directors; then journeying over Lord Howden's property, to arrange for a deviation; examining the proposed site of the station at York. September 2d. At York, giving instructions as to the survey; then to Manchester by Leeds. September 3d. At Manchester; journey to Stockport, with Mr. Bidder and Mr. Bourne, examining the line to Stockport, and fixing the crossing of the river there; attending to the surveys; then journey back to Manchester, to meet the directors of the Manchester and Leeds Railway. September 4th. Sunday at Manchester. September 5th. Journey along part of the Manchester and Leeds Railway. September 6th. At Manchester, examining and laying down the section of the South Union line to Stockport; afterward engaged on the Manchester and Leeds working plans, in endeavoring to give a greater radius to the curves; seeing Mr. Seddon about the Liverpool, Manchester, and Leeds Junction Railway. September 7th. Journey along the Manchester and Leeds line, then on to Derby. September 8th. At Derby; seeing Mr. Carter and Mr. Beale about the Tamworth deviation; then home to Alton Grange. September 10th. At Alton Grange, preparing report to the committee of the Edinburgh and Dunbar Railway."

Such is a specimen of the enormous amount of physical and mental labor undergone by the engineer during the busy years referred to. He was no sooner home than he was called away again. Thus, in four days after his arrival at Alton Grange from the above journey into Scotland, we find him going over the whole of the North Midland line as far as Leeds; then by Halifax to Manchester, where he staid for several days on the business of the South Union line; then to Birmingham and London; back to Alton Grange, and next day to Congleton and Leek; thence to Leeds and Goole, and home again by the Sheffield and Rotherham and the Midland works. And early in the following month (October) he was engaged in the North of Ireland, examining the line, and reporting upon the plans of the projected Ulster Railway. He was also called upon to inspect and report upon colliery works, salt works, brass and copper works, and such like, in addition to his own colliery and railway business. He usually also staked out himself the lines laid out by him, which involved a good deal of labor since undertaken by assistants. And occasionally he would run up to London, attending in person to the preparation and depositing of the plans and sections of the projected undertakings for which he was engaged as engineer.

His correspondence increased so much that he found it necessary

to engage a private secretary, who accompanied him on his journeys. He was himself exceedingly averse to writing letters. The comparatively advanced age at which he learned the art of writing, and the nature of his duties while engaged at the Killingworth Colliery, precluded that facility in correspondence which only constant practice can give. He gradually, however, acquired great facility in dictation, and had also the power of laboring continuously at this work; the gentleman who acted as his secretary in the year 1835, stated that, during his busy season, he one day dictated no fewer than thirty-seven letters, several of them embodying the results of much close thinking and calculation. On another occasion he dictated reports and letters for twelve continuous hours, until his secretary was ready to drop off his chair from sheer exhaustion, and at length pleaded for a suspension of the labor. This great mass of correspondence, though closely bearing on the subjects under discussion, was not, however, of a kind to supply the biographer with matter for quotation, or to give that insight into the life and character of the writer which the letters of literary men so often furnish. They were, for the most part, letters of mere business, relating to works in progress, Parliamentary contests, new surveys, estimates of cost, and railway policy—curt, and to the point; in short, the letters of a man every moment of whose time was precious.

Fortunately, George Stephenson possessed a facility of sleeping, which enabled him to pass through this enormous amount of fatigue and labor without injury to his health. He had been trained in a hard school, and could bear with ease conditions which, to men more softly nurtured, would have been the extreme of physical discomfort. Many, many nights he snatched his sleep while traveling in his chaise; and at break of day he would be at work, surveying until dark, and this for weeks in succession. His whole powers seemed to be under the control of his will, for he could wake at any hour, and go to work at once. It was difficult for secretaries and assistants to keep up with such a man.

It is pleasant to record that in the midst of these engrossing occupations his heart remained as soft and loving as ever. In springtime he would not be debarred of his boyish amusement of bird-nesting, but would go rambling along the hedges spying for nests. In the autumn he went nutting, and when he could snatch a few minutes he indulged in his old love of gardening. His uniform kindness and good temper, and his communicative, intelligent disposition, made him a great favorite with the neighboring farmers, to whom he would volunteer much valuable advice on agricultural operations, drainage, plowing, and labor-saving processes. Sometimes he took a long rural ride on his favorite "Bobby," now growing old, but as fond of his master as ever. Toward the end of his life "Bobby" lived in clover, his master's pet, doing no work; and he died at Tapton in 1845, more than twenty years old.

The amount of Parliamentary business having greatly increased, the Stephensons found it necessary to set up an office in London, in 1836. There consultations were held, schemes matured, and deputations were received. Besides journeys at home, Stephenson was called abroad; at the desire of King Leopold, he made visits to Belgium, to assist the Belgian engineers. That monarch early discerned the powerful instrumentality of railways in developing a country's resources, and determined at the earliest possible period to adopt them as the great high-roads of the nation.

Mr. Stephenson made a second visit, in 1837, on the opening of the line from Brussels to Ghent. Stephenson dined with the chief ministers of state, the municipal authorities, and five hundred of the principal inhabitants. On entering the room, the general and excited inquiry was, "Which is Stephenson?" The English engineer had not before imagined that he was esteemed to be so great a man.

At the dinner at York, which followed the partial opening of the York and North Midland Railway, Mr. Stephenson said "he was sure they would appreciate his feelings when he told them that, when he first began railway business, his hair was black, although it was now gray; and that he began his life's labor as a poor plowboy. About thirty years since, he had applied himself to the study of how to generate high velocities by mechanical means. He thought he had solved that problem; and they had for themselves seen, that day, what perseverance had brought him to. He was, on that occasion, only too happy to have an opportunity of acknowledging that he had, in the latter portion of his career, received much most valuable assistance, particularly from young men brought up in his manufactory. Whenever talent showed itself in a young man, he had always given that talent encouragement where he could, and he would continue to do so."

This was no exaggerated statement. Stephenson was no niggard of encouragement and praise, when he saw honest industry struggling for a footing. Many were the young men whom he took by the hand and led steadily up because he had noted their zeal, diligence, and integrity. One youth, a carpenter on the Manchester line, before many years, was recognized as an engineer of distinction. Another young man, found industriously working, he engaged as his private secretary, who soon rose to eminent influence and usefulness. Indeed, nothing gave him greater pleasure than to help any deserving youth.

The proprietors of the canals were astounded that, notwithstanding the immense traffic by rail, their own receipts continued to increase; and that they fully shared in the expansion of trade and commerce. The cattle-owners were amazed to find the price of horse-flesh increasing with the extension of railways, and that the number of coaches running to and from the new railway stations gave employment to a greater number of horses than under the old stage-coach system. Those who had prophesied the decay of the metropolis, and the ruin

of the suburban cabbage-growers, in consequence of the approach of railways to London, were disappointed; for, while the new roads let citizens out of London, they also let country people in. Their action, in this respect, was centripetal as well as centrifugal. Tens of thousands who had never seen the metropolis could now visit it expeditiously and cheaply; and Londoners who had never visited the country, or but rarely, were enabled, at little cost of time or money, to see green fields and clear blue skies far from the smoke and bustle of town.

The prophecies of ruin and disaster to landlords and farmers were equally confounded by the openings of the railways. The agricultural communications, so far from being "destroyed," as had been predicted, were immensely improved. The farmers were enabled to buy their coals, lime, and manure, for less money, while they obtained a readier access to the best markets for their stock and farm-produce. Notwithstanding the predictions to the contrary, their cows gave milk as before, the sheep fed and fattened, and even skittish horses ceased to shy at the passing trains. The smoke of the engines did not obscure the sky, nor were farm-yards burnt up by the fire thrown from the locomotives. The farming classes were not reduced to beggary; on the contrary, they soon felt that, so far from having any thing to dread, they had very much good to expect from the extension of railways.

Landlords also found that they could get higher rent for farms situated near a railway than at a distance from one. Hence they became clamorous for "sidings." They felt it to be a grievance to be placed at a distance from a station. After a railway had been once opened, not a landlord would consent to have the line taken from him. Owners who had fought the promoters before Parliament, and compelled them to pass their domains at a distance, at a vastly increased expense in tunnels and deviations, now petitioned for branches and nearer station-accommodation. Those who held property near towns, and had extorted large sums as compensation for the anticipated deterioration in the value of their building land, found a new demand for it springing up at greatly advanced prices. Land was now advertised for sale with the attraction of being "near a railway station."

The prediction that, even if railways were made, the public would not use them, was also completely falsified by the results. The ordinary mode of fast traveling for the middle classes had, heretofore, been by mail-coach and stage-coach. Those who could not afford to pay the high prices charged by such conveyance went by wagon, and the poorer classes trudged on foot. George Stephenson was wont to say that he hoped to see the day when it would be cheaper for a poor man to travel by railway than to walk, and not many years passed before his expectation was fulfilled. The railway proved a great benefactor to men of industry in all classes.

Many deplored the inevitable downfall of the old stage-coach system. There was to be an end of that delightful variety of incident usually attendant on a journey by road. The rapid scamper across a fine country on the outside of a four-horse "Express" or "High-flyer;" the seat on the box beside Jehu, or the equally coveted place near the facetious guard behind; the journey amid open green fields, through smiling villages and fine old towns, where the stage stopped to change horses and the passengers to dine, was all very delightful in its way, and many regretted that this old-fashioned and pleasant style of traveling was about to pass away.

The avidity with which the public at once availed themselves of the railways proved that a better system had been discovered. Notwithstanding the reduction of the coach-fares on many of the roads to one-third of their previous rate, the public preferred traveling by railway. They saved in time, and they saved in money, taking the whole expenses into account.

It was some time before the more opulent classes, who could afford to post to town in aristocratic style, became reconciled to the railway train. It put an end to that gradation of rank in traveling which was one of the few things left by which the nobleman could be distinguished from the Manchester manufacturer and bagman. But to younger sons of noble families the convenience and cheapness of the railway did not fail to commend itself. One of these, whose eldest brother had just succeeded to an earldom, said to a railway manager, "I like railways; they just suit young fellows like me, with 'nothing per annum, paid quarterly.' You know, we can't afford to post, and it used to be deuced annoying to me, as I was jogging along on the box-seat of the stage-coach, to see the little earl go by, drawn by his four posters, and just look up at me and give me a nod. But now, with railways, it's different. It's true, he may take a first-class ticket, while I can only afford a second-class one, but *we both go the same pace.*"

For a time, however, many of the old families sent forward their servants and luggage by railroad, and condemned themselves to jog along the old highway in the accustomed family chariot, dragged by country post-horses. But the superior comfort of the railway shortly recommended itself to even the oldest families; posting went out of date; post-horses were with difficulty to be had along even the great high-roads; and nobles and servants, manufacturers and peasants, alike shared in the comfort, the convenience, and the dispatch of railway traveling. The late Dr. Arnold, of Rugby, regarded the opening of the London and Birmingham line as another great step accomplished in the march of civilization. "I rejoice to see it," he said, as he stood on one of the bridges over the railway, and watched the train flashing along under him, and away through the distant hedgerows—"I rejoice to see it, and to think that feudality is gone forever: it is so great a blessing to think that any one evil is really extinct."

It was long before the late Duke of Wellington would trust himself behind a locomotive. The fatal accident to Mr. Huskisson, which had happened before his eyes, contributed to prejudice him strongly against railways, and it was not until the year 1843, that he performed his first trip on the South-western Railway, in attendance upon her majesty. Prince Albert had for some time been accustomed to travel by railway alone, but in 1842 the queen began to make use of the same mode of conveyance between Windsor and London.

GEORGE STEPHENSON'S COAL-MINES — APPEARS AT MECHANICS' INSTITUTES—HIS OPINION ON RAILWAY SPEEDS—ATMOSPHERIC SYSTEM—RAILWAY MANIA—VISITS TO BELGIUM AND SPAIN.

While George Stephenson was engaged on the works of the Midland Railway, in the neighborhood of Chesterfield, several seams of coal were cut through in the Claycross Tunnel, when it occurred to him that if mines were opened out there, the railway would provide the means of a ready sale for the article in the midland counties, and even as far south as the metropolis itself.

At a time when every body else was skeptical as to the possibility of coals being carried from the midland counties to London, he induced some of his Liverpool friends to join him in a coal-mining adventure at Chesterfield. A lease was taken of the Claycross estate, then for sale, and operations were shortly after begun. At a subsequent period, Stephenson extended his coal-mining operations in the same neighborhood, and, in 1841, he entered into a contract with owners of land in the townships of Tapton, Brimington, and Newbold for the working of the coal thereunder, and pits were opened on the Tapton estate on an extensive scale. About the same time, he erected great lime works, close to the Ambergate station of the Midland Railway, from which, when in full operation, he was able to turn out upward of two hundred tons a day. The limestone was brought on a tram-way from the village of Crich, two or three miles distant, the coal being supplied from Claycross Colliery. The works were on a scale such as had not before been attempted, and proved very successful.

Tapton House was included in the lease of one of the collieries, and was conveniently situated—the engineer could proceed north or south on the various lines then under construction. He took up his residence there, and it continued his home until the close of his life.

Tapton House is situated amid woods, upon a commanding eminence. Green fields dotted with fine trees slope away from the house in all directions. Mr. Stephenson had so long been accustomed to laborious pursuits, and felt himself still so full of work, that he could not at once settle down into the habit of quietly enjoying the fruits of his industry.

Besides directing the mining operations at Claycross, the lime-kilns at Ambergate, and the construction of extensive railways still in progress, he occasionally paid visits to Newcastle, where his locomotive manufactory was now reaping the advantages of his early foresight in an abundant measure of prosperity. One of his most interesting visits was in 1838, at the meeting of the British Association there, when he acted as one of the Vice-Presidents in the section of Mechanical Science. Extraordinary changes had taken place in his own fortunes, as well as in the face of the country, since he had first appeared before a scientific body in Newcastle—the members of the Literary and Philosophical Institute—to submit his safety-lamp for their examination. Twenty-three years had passed over his head, full of honest work, of manful struggle, and the humble "colliery engine-wright, of the name of Stephenson," had achieved an almost world-wide reputation. His fellow-townsmen, therefore, could not hesitate to do honor to his presence. He took the opportunity of paying a visit to Killingworth, accompanied by distinguished savans, his friends. He pointed them, with honest pride, to the cottage in which he lived so many years, showing what parts had been his handiwork, and told them the story of the sun-dial over the door. The dial had been serenely numbering the hours through the busy years that had elapsed since that dwelling had been his home.

From a very early period in his history he had taken an active interest in Mechanics' Institutes. While residing at Newcastle, in 1824, he presided at a public meeting held in that town for the purpose of establishing a Mechanics' Institute. But, as George Stephenson was comparatively unknown, his name failed to secure "an influential attendance." The local papers scarcely noticed the proceedings, yet the Mechanics' Institute was founded and struggled into existence. Years passed, and it was felt to be an honor to secure Mr. Stephenson's presence. Among the Mechanics' Institutes in the neighborhood of Tapton, were those of Belper and Chesterfield, and at their soirees he was a frequent and a welcome visitor, and loved to tell his auditors of the difficulties which had early beset him through want of knowledge, and of the means by which he had overcome them. His grand text was—PERSEVERE.

George Stephenson was always an immense favorite with his audiences. His personal appearance was in his favor. A handsome, ruddy, expressive face, lit up by bright dark blue eyes, prepared one for his earnest words when he stood up, and the cheers had subsided which invariably hailed his rising to speak. He was not glib, but very impressive. And who, so well as he, could guide the working-man in endeavors after higher knowledge? His early life had been all struggle—encounter with difficulty—groping in the dark after greater light, but always earnestly and perseveringly. His words were, therefore, all the more weighty, since he spoke from the fullness of his own experience.

Nor did he remain an inactive spectator of improvements in railway working, but continued to contrive improvements in the locomotive, and to mature his invention of the carriage-brake. When examined before the Select Committee on Railways, in 1841, his mind seems to have been impressed with the necessity which existed for adopting a system of self-acting brakes, stating that, in his opinion, this was the most important arrangement that could be provided for increasing the safety of railway traveling. "I believe," he said, "that if self-acting brakes were put upon every carriage, scarcely any accident could take place."

While before the same committee, he stated his views with reference to railway speeds, about which wild ideas were afloat, one gentleman of celebrity having publicly expressed the opinion that a speed of a hundred miles an hour was practicable in railway traveling! Not many years had passed since Mr. Stephenson had been pronounced *insane* for stating his conviction that twelve miles an hour could be performed by the locomotive; but, now that he had established the fact, and greatly exceeded that speed, he was thought behind the age because he recommended it to be limited to forty miles an hour. He said: "I do not like either forty or fifty miles an hour upon any line—I think it an unnecessary speed; and if there is danger upon a railway, it is high velocity that creates it. I should say no railway ought to exceed forty miles an hour on the most favorable gradient; but, upon a curved line, the speed ought not to exceed twenty-four or twenty-five miles an hour." He had, indeed, constructed for the Great Western Railway an engine capable of running fifty miles an hour with a load, and eighty miles without one. But he never was in favor of a hurricane speed of this sort, believing it could only be accomplished at an unnecessary increase both of danger and expense.

"It is true," he observed on other occasions, "I have said the locomotive engine *might* be made to travel a hundred miles an hour, but I always put a qualification on this, namely, as to what speed would best suit the public. The public may, however, be unreasonble; and fifty or sixty miles an hour *is* an unreasonable speed. Long before railway traveling became general, I said to my friends that there was no limit to the speed of the locomotive, *provided the works could be made to stand;* but there are limits to the strength of iron, whether it be manufactured into rails or locomotives, and there is a point at which both rails and tires must break. Every increase of speed, by increasing the strain upon the road and the rolling stock, brings us nearer to that point. At thirty miles, a slighter road will do, and less perfect rolling stock may be run upon it with safety. But if you increase the speed by say ten miles, then every thing must be greatly strengthened. You must have heavier engines, heavier and better-fastened rails, and all your working expenses will be immensely increased. I think I know enough of mechanics to know where to stop. I know that a pound will weigh a pound, and that more

should not be put upon an iron rail than it will bear. If you could insure perfect iron, perfect rails, and perfect locomotives, I grant fifty miles an hour or more might be run with safety on a level railway. But then you must not forget that iron, even the best, will 'tire,' and with constant use will become more and more liable to break at the weakest point — perhaps where there is a secret flaw that the eye can not detect. Then look at the rubbishly rails now manufactured on the contract system—some of them little better than cast metal: indeed, I have seen rails break merely on being thrown from the truck on to the ground. How is it possible for such rails to stand a twenty or thirty ton engine dashing over them at the speed of fifty miles an hour? No, no," he would conclude, "I am in favor of low speeds because they are safe, and because they are economical; and you may rely upon it that, beyond a certain point, with every increase of speed there is a certain increase in the element of danger."

While the railway mania was at its height in England, railways were also being extended abroad, and George Stephenson continued to be invited to give the directors of foreign undertakings the benefit of his advice. One of the most agreeable of his excursions with that object was his third visit to Belgium, in 1845. His special purpose was to examine the proposed line of the Sambre and Meuse Railway. Arrived on the ground, he went carefully over the entire length of the proposed line, and was delighted with the novelty of the journey, the beauty of the scenery, and the industry of the population. His companions were entertained by his ample and varied stores of practical information on all subjects, and his conversation was full of reminiscences of his youth, on which he always delighted to dwell when in the society of his more intimate friends.

The engineers of Belgium invited him to a magnificent banquet at Brussels. Stephenson was greatly pleased with the entertainment. Not the least interesting incident of the evening was his observing, when the dinner was about half over, the model of a locomotive engine placed upon the center-table, under a triumphal arch. Turning suddenly to his friend Sopwith, he exclaimed, "Do you see the 'Rocket?'" It was, indeed, the model of that celebrated locomotive; and the engineer prized the delicate compliment thus paid him perhaps more than all the encomiums of the evening.

The next day (April 5th) King Leopold invited him to a private interview at the palace. Accompanied by Mr. Sopwith, he proceeded to Laaken, and was cordially received by his majesty. The king immediately entered into familiar conversation with him, discussing first the railway project which had been the object of his visit to Belgium, and then the structure of the Belgian coal-fields, his majesty expressing his sense of the great importance of economy in a fuel to the comfort and well-being of society. The subject was always a favorite one with George Stephenson, and, encouraged by the king, he proceeded to explain to him the geological structure of Belgium.

In describing the coal-beds, he used his hat as a sort of model to illustrate his meaning, and the eyes of the king were fixed upon it as he proceeded with his description. The conversation then passed to the rise and progress of trade and manufactures, Stephenson pointing out how closely they every-where followed the coal, being mainly dependent upon it, as it were, for their very existence. The king seemed greatly pleased, and expressed himself as obliged by the interesting information which the engineer had communicated.

George Stephenson paid a farther visit to Belgium in the course of the same year, on the business of the West Flanders Railway, and he had scarcely returned from it ere he was requested to proceed to Spain for the purpose of examining and reporting upon a scheme then on foot for constructing "the Royal North of Spain Railway."

Urgent business required Mr. Stephenson's presence in London on the last day of November. He traveled, therefore, almost continuously, day and night, and the fatigue consequent on the journey, added to the privations endured by the engineer while carrying on the survey among the Spanish mountains, began to tell seriously on his health. By the time he reached Paris he was evidently ill, but he nevertheless determined on proceeding. He reached Havre in time for the Southampton boat, but when on board pleurisy developed itself, and it was necessary to bleed him freely. After a few weeks' rest at home, however, he gradually recovered, though his health remained severely shaken.

ROBERT STEPHENSON'S CAREER—THE STEPHENSONS AND BRUNEL—EAST COAST ROUTE TO SCOTLAND—ROYAL BORDER BRIDGE, BERWICK—HIGH-LEVEL BRIDGE, NEWCASTLE.

The career of George Stephenson was drawing to a close. He had for some time been gradually retiring; in 1840, when the extensive main lines in the Midland districts had been finished and opened, he publicly expresed his intention of withdrawing. Being now sixty, and having spent the greater portion of his life in very hard work, he naturally desired rest. There was less necessity for continuing "in harness," as Robert was in full career as a leading engineer, and his father had pleasure in handing over to him nearly all the railway appointments which he held.

Robert Stephenson had amply repaid his father's care. The sound education of which he had laid the foundations at school, improved by his subsequent culture, but more than all by his father's example of application, industry, and thoroughness in all that he undertook, told powerfully in the formation of his character not less than in the discipline of his intellect. His father had familiarized him with the laws of mechanics, and carefully trained and stimulated his inventive faculties. "I am fully conscious in my own mind," said the son, at a meeting of the Mechanical Engineers at Newcastle,

in 1858, "how greatly my civil engineering has been regulated and influenced by the mechanical knowledge which I derived directly from my father; and the more my experience has advanced, the more convinced I have become that it is necessary to educate an engineer in the workshop. That is, emphatically, the education which will render the engineer most intelligent, most useful, and the fullest of resources in time of difficulty."

Robert Stephenson was but twenty-six years old when the performances of the "Rocket" established the practicability of steam locomotion on railways. He was shortly after appointed engineer of the Leicester and Swannington Railway; after which, at his father's request, he was made joint engineer with himself in laying out the London and Birmingham Railway, and the execution of that line was afterward intrusted to him as sole engineer. The stability and excellence of that railway, the difficulties which had been successfully overcome in its construction, and the judgment displayed by Robert Stephenson throughout the whole undertaking, established his reputation as an engineer, and his father could now look with confidence and pride upon his son's achievements. From that time forward, father and son worked together cordially, each jealous of the other's honor; and, on the father's retirement, it was generally recognized that, in the sphere of railways, Robert Stephenson was the foremost man, the safest guide, and the most active worker.

We have thus noted some leading points in the life of the son up to the age of forty, and here direct the reader's attention to "The Life of Robert Stephenson, F.R.S., late President of the Institution of Civil Engineers, by J. C. Jeaffreson, Barrister-at-Law, 2 Vols., 8vo., London, 1864," and briefly proceed to sketch the later days, more especially of the father, who fought his *own* way from obscurity to eminence as the son did not.

George Stephenson could not brook the idea of seeing the locomotive, for which he had fought so many stout battles, pushed to one side, and that in the very county in which its great powers had been first developed, for Brunel's atmospheric railway, which finally proved wholly valueless for practical purposes. Shareholders in the projected Atmospheric Company were happily prevented by his opposition from investing their capital in what would unquestionably have proved a gigantic blunder, for, in less than three years later, the whole of the atmospheric tubes which had been laid down on other lines were pulled up, and the materials sold, including Mr. Brunel's immense tube on the South Devon Railway, to make way for the working of the locomotive engine. George Stephenson's first verdict of "It won't do" was thus conclusively confirmed.

One day George was standing with his back to the fire, when Lord Howick called to see Robert. Oh! thought George, he has come to try and talk Robert over about that atmospheric gimcrack; but I'll tackle his lordship. "Come in, my lord," said he; "Robert's busy;

but I'll answer your purpose quite as well; sit down here, if you please." George began, "Now, my lord, I know very well what you have come about; it's that atmospheric line in the North; I will show you, in less than five minutes, that it can never answer." "If Mr. Robert Stephenson is not at liberty, I can call again," said his lordship. "He's certainly occupied on important business just at present," was George's answer, "but I can tell you far better than he can what nonsense the atmospheric system is: Robert's good-natured, you see, and if your lordship were to get alongside of him, you might talk him over; so you have been quite lucky in meeting with me. Now just look at the question of expense;" and then he proceeded in his strong Doric to explain his views in detail, until Lord Howick could stand it no longer, and he rose and walked toward the door. George followed him down stairs to finish his demolition of the atmospheric system, and his parting words were, "You may take my word for it, my lord, it will never answer." George afterward told his son with glee of "the settler" he had given Lord Howick.

So closely were the Stephensons identified with the Newcastle and Berwick Railway, and so great was the personal interest which they were both known to take in its success, that, on the news of the passing of the bill reaching Newcastle, a sort of general holiday took place, and the workmen belonging to the Stephenson Locomotive Factory, upward of eight hundred in number, walked in procession through the principal streets of the town, accompanied by music and banners.

CLOSING YEARS OF GEORGE STEPHENSON'S LIFE—ILLNESS AND DEATH —CHARACTER.

George Stephenson was present on the occasion of the floating and raising of the first Conway tube, and there witnessed a proof of the soundness of Robert's judgment as to the efficiency and strength of the structure, of which he had at first expressed some doubt; but before the like test could be applied at the Britannia Bridge, George Stephenson's mortal anxieties were at an end, for he had then ceased from all his labors. Toward the close of his life, George Stephenson devoted himself chiefly to his extensive collieries and lime works, taking a local interest only in such projected railways as were calculated to open up new markets for their products.

At home he lived the life of a country gentleman, enjoying his garden and grounds, and indulging his love of nature, which, through all his busy life, had never left him. It was not until the year 1845 that he took an active interest in horticultural pursuits. Then he began to build new melon-houses, pineries, and vineries, of great extent; and he now seemed as eager to excel all other growers of exotic plants in his neighborhood, as he had been some thirty years before

to surpass the villagers of Killingworth in the production of cabbages and cauliflowers. He had a pine-house built 68 feet in length, and a vinery 140 feet. Workmen were constantly employed in enlarging them, until at length he had no fewer than ten glass forcing-houses. He did not take so much pleasure in flowers as in fruits. At one of the county agricultural meetings, he said that he intended yet to grow pine-apples at Tapton as big as pumpkins. The only man to whom he would "knock under" was his friend Paxton, the gardener to the Duke of Devonshire; but he was so old in the service, and so skillful, that he could scarcely hope to beat him. Yet his "Queen" pines did take the first prize at a competition with the duke, though this was not until shortly after his death, when the plants had become fully grown. Stephenson's grapes also took the first prize at Rotherham, at a competition open to all England. He was extremely successful in producing melons, having invented a method of suspending them in baskets of wire gauze, which, by relieving the stalk from tension, allowed nutrition to proceed more freely, and better enabled the fruit to grow and ripen.

Farming operations were carried on by him with success. He experimented on manure, and fed cattle after methods of his own. He was very particular as to breed and build in stock-breeding. "You see, sir," he said to one gentleman, "I like to see the *coo's* back at a gradient something like this" (drawing an imaginary line with his hand), "and then the ribs or girders will carry more flesh than if they were so—or so." When he attended the county agricultural meetings, which he frequently did, he was accustomed to take part in the discussions, and he brought the same vigorous practical mind to bear upon questions of tillage, drainage, and farm economy which he had before been accustomed to exercise on mechanical and engineering matters.

All his early affection for birds and animals revived. He had favorite dogs and cows and horses; and again he began to keep rabbits, and to pride himself on the beauty of his breed. There was not a bird's nest in the grounds that he did not know of; and from day to day he went round watching the progress which the birds made with their building, carefully guarding them from harm. His minute knowledge of the habits of British birds was the result of a long, loving, and close observation of nature.

At Tapton he remembered the failure of his early experiment in hatching birds' eggs by heat, and he now performed it successfully, being able to secure a proper apparatus for maintaining a uniform temperature. He was also curious about the breeding and fattening of fowls; and when his friend, Edward Pease, of Darlington, visited him at Tapton, he explained a method which he had invented of fattening chickens in half the usual time. The chickens were confined in boxes, which were so made as to exclude the light. Dividing the day into two or three periods, the birds were shut up at the end of

each, after a heavy feed, and went to sleep. The plan proved very successful, and Mr. Stephenson jocularly said that if he were to devote himself to chickens he could soon make a little fortune.

Mrs. Stephenson tried to keep bees, but found they would not thrive at Tapton. Many hives perished, and there was no case of success. The cause of failure was long a mystery to the engineer; but one day his acute powers of observation enabled him to unravel it. At the foot of the hill on which Tapton House stands, he saw some bees trying to rise up from among the grass, laden with honey and wax. They were already exhausted, as if with long flying; and then it occurred to him that the height at which the house stood above the bees' feeding-ground rendered it difficult for them to reach their hives when heavy laden, and hence they sank exhausted. He afterward incidentally mentioned the circumstance to Mr. Jesse, the naturalist, who concurred in his view as to the cause of failure, and was much struck by the keen observation which had led to its solution.

George Stephenson had none of the habits of the student. He read very little; for reading is a habit which is generally acquired in youth, and his youth and manhood had been, for the most part, spent in hard work. Books wearied him and sent him to sleep. Novels excited his feelings too much, and he avoided them, though he would occasionally read through a philosophical work on a subject in which he felt particularly interested. He wrote very few letters with his own hand. Nearly all his letters were dictated, and he avoided even dictation when he could. His greatest pleasure was in conversation, from which he gathered most of his imparted information.

It was his practice, when about to set out on a journey by railway, to walk along the train before it started, and look into the carriages to see if he could find "a conversible face." On one of such occasions, at the Euston Station, he discovered in a carriage a very handsome, manly, and intelligent face, which he afterward found was that of the late Lord Denman. He was on his way down to his seat at Stony Middleton, in Derbyshire. Stephenson entered the carriage, and the two were shortly engaged in interesting conversation. It turned upon chronometry and horology, and the engineer amazed his lordship by the extent of his knowledge on the subject, in which he displayed as much minute information, even down to the latest improvements in watch-making, as if he had been bred a watchmaker and lived by the trade. Lord Denman was curious to know how a man, whose time must have been mainly engrossed by engineering, had gathered so much knowledge on a subject quite out of his own line, and he asked the question. "I learned clock-making and watch-making," was the answer, "while a working man at Killingworth, when I made a little money in my spare hours by cleaning the pitmen's clocks and watches; and since then I have kept up my information on the subject." This led to farther questions; and then he proceeded to

tell Lord Denman the interesting story of his life, which held him entranced during the remainder of the journey.

Many of his friends readily accepted invitations to Tapton House to enjoy his hospitality, which never failed. With them he would "fight his battles o'er again," reverting often to his battle for the locomotive; and he was never tired of telling, nor were his auditors of listening to, the lively anecdotes with which he was accustomed to illustrate the struggles of his early career. While walking in the woods or through the grounds, he would arrest his friends' attention by allusion to some simple object—such as a leaf, a blade of grass, a bit of bark, a nest of birds, or an ant carrying its eggs across the path—and descant in glowing terms on the creative power of the Divine Mechanician, whose contrivances were so exhaustless and so wonderful. This was a theme upon which he was often accustomed to dwell in reverential admiration when in the society of his more intimate friends.

One night, when walking under the stars, and gazing up into the field of suns, each the probable center of a system, forming the Milky Way, a friend observed, "What an insignificant creature is man in sight of so immense a creation as this!" "Yes!" was his reply: "but how wonderful a creature also is man, to be able to think and reason, and even in some measure to comprehend works so infinite!"

A microscope which he had brought down to Tapton was a source of immense enjoyment, and he was never tired of contemplating the minute wonders which it revealed. One evening, when some friends were visiting him, he induced each of them to puncture his skin so as to draw blood, in order that he might examine the globules through the microscope. One of the gentlemen present was a teetotaler, and Stephenson pronounced his blood to be the most lively of the whole. He had a theory of his own about the movement of the globules in the blood, which has since become familiar. It was, that they were respectively charged with electricity, positive at one end and negative at the other, and that they thus attracted and repelled each other, causing a circulation. No sooner did he observe any thing new than he immediately set about devising a reason for it. His training in mechanics, his practical familiarity with matter in all its forms, and the strong bent of his mind, led him first of all to seek for a mechanical explanation; and yet he was ready to admit that there was a something in the principle of *life*—so mysterious and inexplicable—which baffled mechanics, and seemed to dominate over and control them. He did not care much, either, for abstruse mechanics, but only for the experimental and practical, as is usually the case with those whose knowledge has been self-acquired.

Even at his advanced age the spirit of frolic had not left him. When proceeding from Chesterfield Station to Tapton House with his friends, he would almost invariably challenge them to a race up the steep path, partly formed of stone steps, along the hill-side. And he

would struggle, as of old, to keep the front place, though by this time his "wind" greatly failed him. He would occasionally invite an old friend to take a wrestle with him on the lawn, to keep up his skill, and perhaps to try some new "knack" of throwing. In the evening he would sometimes indulge his visitors by reciting the old "Damon and Phyllis," or singing his favorite song of "John Anderson my Joe."

But his greatest enjoyment on such occasion was "a crowdy." "Let's have a crowdie night," he would say; and forthwith a kettle of boiling water was ordered in, with a basin of oatmeal. Taking a large bowl, containing a sufficiency of hot water, and placing it between his knees, he poured in oatmeal with one hand and stirred the mixture vigorously with the other. When enough meal had been added, and the stirring was completed, the crowdie was made. It was then supped with new milk, and Mr. Stephenson generally pronounced it "capital!" It was the diet to which he had been accustomed when a working-man, and all the dainties with which he had become familiar in recent years had not spoiled his simple tastes. To enjoy crowdie at his years, besides, indicated that he still possessed that quality on which no doubt much of his practical success in life depended—a strong and healthy digestion.

He would also frequently invite to his house the humbler companions of his early life, and take pleasure in talking over old times with them. He never assumed any of the bearings of the great man on such occasions, but treated his visitors with the same friendliness and respect as if they had been his equals, sending them away pleased with themselves and delighted with him. At other times, needy men who had known him in their youth would knock at his door, and they were never refused access. But if he had heard of any misconduct on their part, he would rate them soundly. One who knew him intimately in private life has seen him exhorting such backsliders, and denouncing their misconduct and imprudence, with the tears streaming down his cheeks. And he would generally conclude by opening his purse, and giving them the help which they needed "to make a fresh start in the world."

His life at Tapton during his later years was occasionally diversified by a visit to London. His engineering business having become limited, he generally went there for the purpose of visiting friends, or "to see what there was fresh going on." He found a new race of engineers springing up on all sides—men who knew him not; and his London journeys gradually ceased to yield him pleasure. At other times he visited Newcastle, which always gave him great pleasure. He would, on such occasions, go out to Killingworth and seek up old friends, and if the people whom he knew were too retiring, and shrunk into their cottages, he went and sought them there. Striking the floor with his stick, and holding his noble person upright, he would say, in his own kind way, "Well, and how's all

here to-day?" To the last he had always a warm heart for Newcastle and its neighborhood.

Sir Robert Peel, on more than one occasion, invited George Stephenson to his mansion at Drayton, where he was accustomed to assemble round him men of the highest distinction in art, science, and legislation, during the intervals of his Parliamentary life. The first invitations were respectfully declined; but Sir Robert again pressing him to come down to Tamworth, where he would meet Buckland, Follett, and others well known to both, he at last consented.

Stephenson's strong powers of observation, together with his native humor and shrewdness, imparted to his conversation at all times much vigor and originality. Though mainly an engineer, he was also a profound thinker on many scientific questions, and there was scarcely a subject of speculation, or a department of recondite science, on which he had not employed his faculties in such a way as to have formed large and original views.

In 1847, the year before his death, George Stephenson was again invited to join a distinguished party at Drayton Manor, and to assist in the ceremony of formally opening the Trent Valley Railway, which had been designed and laid out by himself many years before. The first sod of the railway had been cut by the prime minister in November, 1845, and the formal opening took place on the 26th of June, 1847, the line having thus been constructed in less than two years.

What a change had come over the spirit of the landed gentry since the time when George Stephenson had first projected a railway through that district! Then they were up in arms against him, characterizing him as the devastator and spoiler of their estates, whereas now he was hailed as one of the greatest benefactors of the age. Sir Robert Peel, the chief political personage in England, welcomed him as a guest and friend, and spoke of him as the chief among practical philosophers. A dozen members of Parliament, seven baronets, with all the landed magnates of the district, assembled to celebrate the opening of the railway. The clergy were there to bless the enterprise, and to bid all hail to railway progress, as "enabling them to carry on with greater facility those operations in connection with religion which were calculated to be so beneficial to the country." The army, speaking through the mouth of General A'Court, acknowledged the vast importance of railways, as tending to improve the military defenses of the country. And representatives from eight corporations were there to acknowledge the great benefits which railways had conferred upon the merchants, tradesmen, and working classes of their respective towns and cities.

In the spring of 1848, George Stephenson was invited to Whittington House, near Chesterfield, the residence of his friend and former pupil, Mr. Swanwick, to meet the distinguished American, Emerson.

On being introduced to each other, they did not immediately engage in conversation; but presently Stephenson jumped up, took Emerson by the collar, and, giving him one of his friendly shakes, asked how it was that in England we could always tell an American. This led to an interesting conversation, in the course of which Emerson said that he had every-where been struck by the haleness and comeliness of the English men and women, from which they diverged into a discussion of the influences which air, climate, moisture, soil, and other conditions exercised on the physical and moral development of a people. The conversation was next directed to the subject of electricity, on which Stephenson launched out enthusiastically, explaining his views by several simple and some striking illustrations. From thence it gradually turned to the events of his own life, which he related in so graphic a manner as completely to rivet the attention of the American. Afterward Emerson said "that it was worth crossing the Atlantic, were it only to have seen Stephenson—he had such force of character and vigor of intellect."

The rest of George Stephenson's days were spent quietly at Tapton, among his dogs, his rabbits, and his birds. When not engaged about the works connected with his collieries, he was occupied in horticulture and farming. He continued proud of his flowers, his fruits, and his crops, while the old spirit of competition was still strong within him. Although he had for some time been in delicate health, and his hand shook from nervous debility, he appeared to possess a sound constitution. Emerson had observed of him that he had the lives of many men in him. But, perhaps, the American spoke figuratively, in reference to his vast stores of experience. It appeared that he had never completely recovered from the attack of pleurisy which seized him during his return from Spain. As late, however, as the 26th of July, 1848, he felt himself sufficiently well to be able to attend a meeting of the Institute of Mechanical Engineers at Birmingham, and to read to the members his paper "On the Fallacies of the Rotatory Engine."

It was his last public appearance. Shortly after his return to Tapton, he had an attack of intermittent fever, from which he seemed to be recovering, when a sudden effusion of blood from the lungs carried him off, on the 12th of August, 1848, in the sixty-seventh year of his age. When all was over, Robert wrote to Edmund Pease: "With deep pain I inform you, as one of his oldest friends, of the death of my dear father this morning at twelve o'clock, after about ten days' illness from severe fever." Mr. Starbuck, who was also present, wrote: "The favorable symptoms of yesterday morning were toward evening followed by a serious change for the worse. This continued during the night, and early this morning it became evident that he was sinking. At a few minutes before twelve to-day he breathed his last. All that the most devoted and unremitting care

of Mrs. Stephenson* and the skill of medicine could accomplish has been done, but in vain."

George Stephenson's remains were followed to the grave by a large body of his work-people, by whom he was greatly admired and beloved. They remembered him as a kind master, who was ever ready actively to promote all measures for their moral, physical, and mental improvement. The inhabitants of Chesterfield evinced their respect for the deceased by suspending business, closing their shops, and joining in the funeral procession, which was headed by the corporation of the town. Many of the surrounding gentry also attended. The body was interred in Trinity Church, Chesterfield, where a simple tablet marks the great engineer's last resting-place.

The statue of George Stephenson, which the Liverpool and Manchester and Grand Junction Companies had commissioned, was on its way to England when his death occurred; and it served for a monument, though his best monument will always be his works. The statue referred to was placed in St. George's Hall, Liverpool. A full-length statue of him, by Bailey, was also erected, a few years later, in the noble vestibule of the London and North-western Station, in Euston Square. A subscription for the purpose was set on foot by the Society of Mechanical Engineers, of which he had been the founder and president. A few advertisements were inserted in the newspapers, inviting subscriptions; and it is a notable fact that the voluntary offerings included an average of two shillings each from 3,150 working men, who embraced this opportunity of doing honor to their distinguished fellow-workman.

But the finest and most appropriate statue to the memory of George Stephenson is that which was erected in 1862, after the design of John Lough, at Newcastle-upon-Tyne. It is in the immediate neighborhood of the Literary and Philosophical Institute, to which both George and his son Robert were so much indebted in their early years; close to the great Stephenson locomotive foundry, established by the shrewdness of the father; and in the vicinity of the High-Level Bridge, one of the grandest products of the genius of the son. The head of Stephenson, as expressed in this noble work, is massive, characteristic, and faithful; and the attitude of the figure is simple, yet manly and energetic. It stands on a pedestal, at the respective corners of which are sculptured the recumbent figures of a pitman, a mechanic, an engine-driver, and a plate-layer. The statue appropriately stands in a very thoroughfare of working-men, thousands of whom see it daily as they pass to and from their work; and we can imagine them, as they look up to Stephenson's manly figure, applying

* The second Mrs. Stephenson having died in 1845, George married a third time, in 1848, about six months before his death. The third Mrs. Stephenson was an intelligent and respectable lady, who had for some years officiated as his housekeeper.

to it the words addressed by Robert Nicoll to Robert Burns, with perhaps still greater appropriateness:

"Before the proudest of the earth
We stand, with an uplifted brow;
Like us, thou wast a toiling man—
And we are noble now!"

George Stephenson had a shrewd, kind, honest, manly face. His fair, clear countenance was ruddy, and seemingly glowed with health. The forehead was large and high, projecting over the eyes, and there was that massive breadth across the lower part, which is usually observed in men of eminent constructive skill. The mouth was firmly marked, and shrewdness and humor lurked there as well as in the keen gray eye. His frame was compact, well knit, and rather spare. His hair became gray at an early age, and toward the close of his life it was of a pure silky whiteness. He dressed neatly in black, wearing a white neckcloth; and his face, his person, and his deportment at once arrested attention.

ROBERT STEPHENSON'S VICTORIA BRIDGE, LOWER CANADA—RAILROAD STATISTICS OF CANADA, THE UNITED STATES, AND OTHER COUNTRIES —THE DISTINGUISHED HONOR CONFERRED UPON ROBERT STEPHENSON—HIS ILLNESS AND DEATH.

George Stephenson bequeathed to his son his valuable collieries, his share in the engine manufactory at Newcastle, and his large accumulation of savings, which, together with the fortune he had himself amassed by railway work, gave Robert the position of an engineer millionaire—the first of his order. He continued, however, to live in a quiet style; and although he bought occasional pictures and statues, and indulged in the luxury of a yacht, he did not live up to his income, which went on accumulating until his death.

Although Robert Stephenson, in conformity with this expressed intention, for the most part declined to undertake new business, he did not altogether lay aside his harness, and he lived to repeat his tubular bridges both in Egypt and Canada. The success of the tubular system, as adopted at Menai and Conway, was such as to recommend it for adoption wherever great span was required, and the peculiar circumstances connected with the navigation of the Nile and the St. Lawrence may be said to have compelled its adoption in carrying railways across both those rivers.

Having, as engineers say, "diverged from the main line," and got over into Canada, we may go on to speak briefly of what has been done in railroads in the provinces, and also in the United States.* The two main lines of Canada, the "Grand Trunk" and "Great

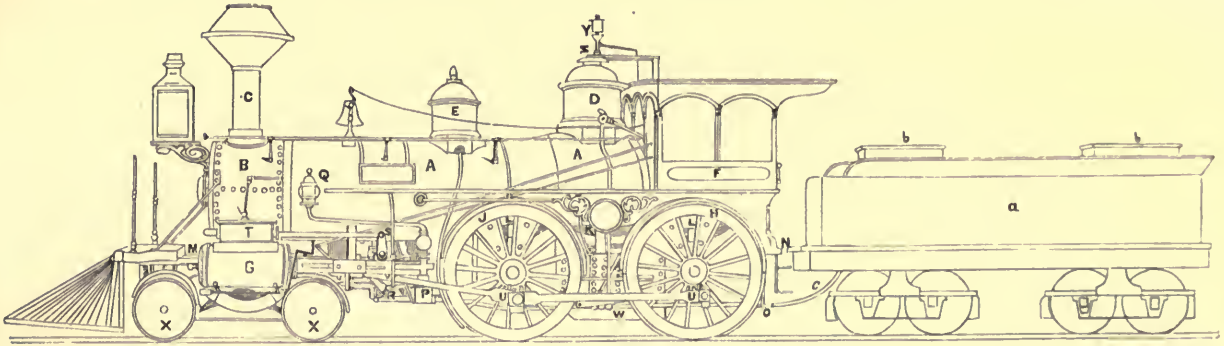
* Up to the beginning of 1872.

Western," make, with their branches, about 2,000 miles; the former has 336 locomotives and 160 first-class passenger cars, and the latter 140 locomotives and 133 first-class cars. Altogether there are, perhaps, in the Canadas nearly 3,000 miles of railroad in operation, and over 600 locomotives employed.

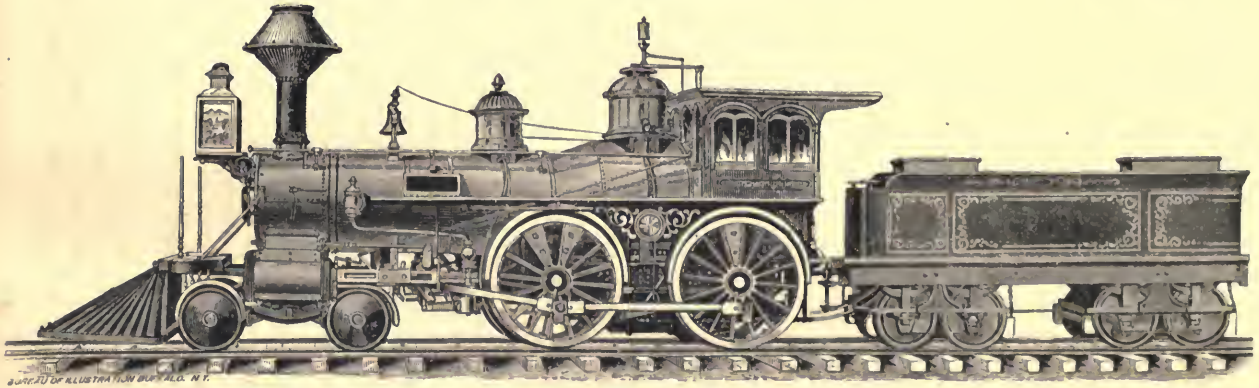
The people of the United States were the first to follow the example of England, after the practicability of steam locomotion had been proved on the Stockton and Darlington and Liverpool and Manchester Railways. The first sod of the Baltimore and Ohio Railway was cut on the 4th of July, 1828, and the line, as originally contracted for, was completed and opened for traffic in the following year, when it was worked partly by horse-power, and partly by a locomotive built at Baltimore, which is still preserved in the Company's workshops. In 1830 the Hudson and Mohawk Railway was begun, while other lines were under construction in Pennsylvania, Massachusetts, and New Jersey; and in the course of ten years, 1,843 miles were finished and in operation. In ten more years, 8,827 miles were at work; at the end of 1864, not less than 35,000 miles, mostly single tracks; while about 15,000 miles more were under construction. At the close of 1870 there were in operation 53,400 miles; and at the opening of the present year, 1872, there were 60,850 miles of railway in the United States doing active duty. In the passenger and freight service on these roads there were employed nearly 12,000 locomotive engines, all constructed essentially on the same general plan as the improved engines produced by the Stephensons at Newcastle.

Among the illustrations in this volume appear cuts representing the locomotive in its various stages of development; the later one, a picture of one of the better class now used in the United States, accompanied by a diagram, which will convey to the reader a much clearer idea of the different parts of this ponderous and agile machine than can be given by words alone.

Having spoken of the length of railroads in Canada and the United States, we proceed to give the number of miles in operation at the opening of 1867, in the different countries of the world: In Mexico there were but 78 miles; in Cuba 396 miles; in all of South America about 1,250 miles; in Australasia about 600 miles; in Africa 491 miles; in Asiatic Turkey 143 miles; in Java 101 miles; in Ceylon 37 miles, and in British India 3,379 miles. While on the continent of Europe there were in Turkey 170 miles; in Russia 2,775 miles; Norway 44 miles, and Sweden 1,025 miles; Denmark 295 miles; in Holland 700 miles; Belgium about 1,600 miles; in Austria 3,830 miles; in Prussia and the remaining German States 9,400 miles; in Switzerland 824 miles; in Italy 3,215 miles; in Portugal 434 miles; in Spain 3,116 miles; in France 8,982 miles; and in Great Britain and Ireland 13,289 miles. About 50,000 miles in all Europe, and between 6,000 and 7,000 miles on the other continents, not counting



A, The Boiler. B, Smoke Box. C, The Chimney. E, Sand Box. F, The Cab. G, Cylinder. H, Trailing Driver. J, Leading Driver. K, Equalizing Beam. L, The Springs. M, N, The Frame. O, P, Feed Pipe. P, Pumps. Q, Check Valve. R, S, T, Valve Gear. S, R, Rocker Arms. T, Steam Chest. U, U, Eccentric Rod. U, V, Slide Rod. W, Ash Pan. X, X, Wheels of Truck. a, b, b, Tender for Fuel and Water.



BUREAU OF ILLUSTRATION BUFFALO, N.Y.

An American Locomotive, 1872.

North America, which now more than equals in number of miles all that had elsewhere been built five years ago.

According to Mr. Mills, 166,047 men and officers were employed in the working of 13,289 miles open in the United Kingdom in 1865, besides 53,923 employed on lines then under construction. The most numerous body of workmen is that of the laborers (81,284) employed in the maintenance of the permanent way. Being mostly picked men from the laboring class of the adjoining districts, they are paid considerably higher wages, and hence one of the direct effects of railways on the laboring population (besides affording them greater facilities for locomotion) has been to raise the standard of wages of ordinary labor at least *2s.* a week in all the districts into which they have penetrated. The workmen next in number is that of the artificers (40,167) employed in constructing and repairing the rolling-stock; the porters (25,381), the plate-layers (12,901), guards and brakemen (5,799), firemen (5,266), and engine-drivers (5,171). But, besides the employees directly engaged in the working and maintenance of railways, large numbers of workmen are also occupied in the manufacture of locomotives and rolling-stock, and in providing the requisite materials for the permanent way. Thus the consumption of rails alone averages nearly 400,000 tons a year in the United Kingdom alone, while the replacing of decayed sleepers requires about 10,000 acres of forest to be cut down annually and sawn into sleepers. Taking the various railway workmen into account, with their families, it will be found that they represent a total of about three-quarters of a million persons, or about one in fifty of the population, who are dependent on railways for their subsistence.

The results of the working of railways in many respects differ from those anticipated by their projectors. One of the most unexpected has been the growth of an immense passenger-traffic. The Stockton and Darlington line was projected as a coal line only, and the Liverpool and Manchester as a merchandise line. Passengers were not taken into account as a source of revenue; for, at the time of their projection, it was not believed that people would trust themselves to be drawn upon a railway by an "explosive machine," as the locomotive was described to be. Indeed, a writer of eminence declared that he would as soon think of being fired off on a ricochet rocket as travel on a railway at twice the speed of the old stage-coaches. So great was the alarm which existed as to the locomotive, that the Liverpool and Manchester Committee pledged themselves, in their second prospectus, issued in 1825, "not to require any clause empowering its use;" and as late as 1829, the Newcastle and Carlisle Act was conceded on the express condition that it should not be worked by locomotives, but by horses only.

Nevertheless, the Liverpool and Manchester Company obtained powers to make and work their railway without any such restriction; and when the line was made and opened, a locomotive passenger-

train was ordered to be run upon it by way of experiment. Greatly to the surprise of the directors, more passengers presented themselves than could conveniently be carried. The first passenger vehicles were of a very primitive character, being mainly copied from the old stage-coach. The passengers were "booked" at the railway office, and their names were entered in a way-bill which was given to the guard when the train started. Though the usual stage-coach bugleman could not conveniently go along, the trains were played out of the terminal stations by a lively tune performed at the end of the platform; this was done at the Manchester Station until a comparatively recent date.

The number of passengers was so unexpectedly great that it was soon found necessary to remodel the entire system. Tickets were introduced, and more roomy and commodious carriages provided. Every thing was found to have been made too light. The prize "Rocket," which weighed only 4½ tons when loaded with its coke and water, was found quite unsuited for drawing the increasingly heavy loads of passengers. There was this difference between the stage-coach and the railway train, the former was "full" with six inside and ten outside, the latter must be able to accommodate whatever number of passengers came. Hence heavier and more powerful engines, and larger and more substantial carriages, were from time to time added.

The speed of the trains was increased. The first locomotives used with coal-trains ran four to six miles an hour. On the Darlington line the speed was increased to about ten miles, and on the Manchester line the first passenger-trains were run at the average speed of seventeen miles an hour, at that time considered very fast. When the London and Birmingham line was opened, the mail-trains were run at twenty-three miles an hour; and gradually the speed went up, until now the fast trains are run fifty to sixty miles an hour—the pistons in the cylinders, at sixty miles, traveling 800 feet per minute.

To bear the heavy engines run at high speeds, a much stronger and heavier road was found necessary. Shortly after the opening of the Liverpool and Manchester line, it was entirely relaid with stronger materials. Now that express passenger-engines are from thirty to thirty-five tons each, the weight of the rails has been increased from 35 lbs. to 75 lbs. or 86 lbs. to the yard. Stone blocks have given place to wooden sleepers; rails with loose ends resting on the chairs, to rails with their ends firmly "fished" together; and in many places, where the traffic is unusually heavy, iron rails have been replaced by those of steel.

And now see the enormous magnitude to which railway passenger-traffic has grown. In the year 1866, 274,293,668 passengers were carried by day tickets in Great Britain alone. But this was not all; for in that year 110,227 periodical tickets were issued by the different railways; and assuming half of them to be annual, one-fourth half-

yearly, and the remainder quarterly, tickets, and that their holders made only five journeys each way weekly, this would give an additional number of 39,405,600 journeys, or a total of 313,699,268 passengers carried in Great Britain in one year.

It is difficult to grasp the idea of the enormous number of persons represented by these figures. The mind is bewildered, and can form no adequate notion of their magnitude. To reckon them singly would occupy twenty years, counting one a second for twelve hours a day. Or, supposing every man, woman, and child in Great Britain to make ten journeys by rail yearly, the number would fall short of the passengers carried in 1866.

Mr. Porter, in his "Progress of the Nation," estimated that thirty millions of passengers, or about eighty-two thousand a day, traveled by coaches in Great Britain in 1834, an average distance of twelve miles each, at an average cost of 5*s.* a passenger, or at the rate of 5*d.* a mile; whereas above 313 millions are now carried by railway an average distance of 8½ miles each, at an average cost of 1*s.* 1½*d.* per passenger, or about three half-pence per mile, in considerably less than half the time.

But, besides, one hundred and twenty-four million tons of minerals and merchandise were carried by railway in the United Kingdom in 1866, and fifteen millions of cattle, besides mails, parcels, and other traffic. The distance run by passenger and goods trains in the year was 142,807,853 miles, to accomplish which it is estimated that four miles of railway on an average must be covered by running trains during every second all the year round.

To perform this service, there were, in 1866, 8,125 locomotives at work in the United Kingdom, consuming about three million tons of coal and coke, and flashing into the air every minute some thirty tons of water in the form of steam in a high state of elasticity. There were also 19,228 passenger-cars, 7,276 vans and breaks attached to passenger-trains, and 242,947 trucks, wagons, and other vehicles appropriated to merchandise. Buckled together, buffer to buffer, the locomotives and tenders would extend for a length of about 54 miles, or more than the distance from London to Brighton; while the carrying vehicles, joined together, would form two trains occupying a double line of railway extending from London to beyond Inverness.

A notable feature in the growth of railway traffic of late years has been the increase in the number of third-class passengers, compared with first and second class. Sixteen years since, the third-class passengers constituted only about one-third; ten years later they were about one-half; whereas now they form nearly two-thirds of the whole number carried. Thus George Stephenson's prediction, "that the time would come when it would be cheaper for a working man to make a journey by railway than to walk on foot," is already realized.

The degree of safety with which this great traffic has been conducted is not the least remarkable of its features. Of course, so long

as railways are worked by men, they will be liable to the imperfections belonging to all things human. Though their machinery may be perfect, and their organization as complete as skill and forethought can make it, workmen will at times be forgetful and listless, and a moment's carelessness may lead to the most disastrous results. Yet, taking all circumstances into account, the wonder is that traveling by railway at high speeds should have been rendered comparatively so safe.

To be struck by lightning is one of the rarest of all causes of death, yet more persons were killed by lightning in Great Britain, in 1866, than were killed on railways from causes beyond their own control; the number in the former case having been nineteen, and in the latter fifteen, or one in every twenty millions of passengers carried. Most persons would consider the probability of their dying by hanging to be extremely remote; yet, according to the Registrar General's returns for 1867, it is thirty times greater than that of being killed by railway accident. Taking the number of persons who traveled in Great Britain in 1866 at 313,699,268, of whom fifteen were accidentally killed, it would appear that, even supposing a person to have a permanent existence, and to make a journey by railway daily, the probability of his being killed in an accident would occur on an average once in above 50,000 years.

The remarkable safety with which railway traffic is on the whole conducted, is due to constant watchfulness and highly-applied skill. The men who work the railways are for the most part picked men. Where railways fail in these respects, it will usually be found that it is because better men are not to be had. It must also be added that the onerous and responsible duties which railway workmen are called upon to perform require a degree of consideration on the part of the public which is not very often extended to them.

Few are aware of the complicated means and agencies that are in constant operation on railways day and night to insure the safety of the passengers to their journeys' end. The road is under a system of continuous inspection, under gangs of men—about twelve to every five miles, under a foreman—whose duty it is to see that the rails and chairs are sound, all their fastenings complete, and the line clear of obstructions.

Then, at all the junctions, sidings, and crossings, switch-men are stationed, with definite instructions as to the duties to be performed by them. At these places signals are provided, worked from the station platforms, or from special signal-boxes, for the purpose of protecting the stopping or passing trains. When the first railways were opened the signals were of a very simple kind. The station-men gave them with their arms stretched out in different positions; then flags of different colors were used; next fixed signals, with arms or discs, or of rectangular or triangular shape. These were followed by

a complete system of semaphore signals, near and distant, protecting all junctions, sidings, and crossings.

The Electric Telegraph has also been found a valuable auxiliary in insuring the safe working of large railway traffics. Though the locomotive may run at sixty miles an hour, electricity, when at its fastest, travels at the rate of 288,000 miles a second, and is therefore always able to herald the coming train. The electric telegraph may, indeed, be regarded as the nervous system of the railway. By its means the whole line is kept throbbing with intelligence. The method of working electric signals varies on different lines; but the usual practice is to divide a line into so many lengths, each protected by its signal-stations, the fundamental law of telegraph working being that two engines are not to be allowed to run on the same line between two signal-stations at the same time. When a train passes one of such stations, it is immediately signaled on—usually by electric signal-bells—to the station in advance, and that inverval of railway is "blocked" until the signal has been received from the station in advance that the train has passed it. Thus, *an interval of space* is always secured between trains following each other, which are thereby alike protected before and behind. And thus, when a train starts on a journey of it may be hundreds of miles, it is signaled on from station to station, and "lives along the line," until at length it reaches its destination, and the last signal of "train in" is given. By this means an immense number of trains can be worked with regularity and safety.

One of the remarkable effects of railways has been to extend the residential area of all large towns and cities. This is especially notable in the case of London. Before the introduction of railways, the residential area of the metropolis was limited by the time occupied by business men in making the journey outward and inward daily; but now that stations have been established near the center of the city, the metropolis has become extended in all directions along its railway lines, and the population of London, instead of living in the city or its immediate vicinity as formerly, have come to occupy a residential area of not less than six hundred square miles!

We have little to add as to the closing events in Robert Stephenson's life. Retired in a great measure from the business of an engineer, he occupied himself for the most part in society, in yachting, and in attending the House of Commons and the Clubs. It was in the year 1847 that he entered the House of Commons as member for Whitby; but he does not seem to have been very regular in his attendance, and only appeared on divisions when there was a "whip" of the party to which he belonged. He was a member of the Sewage and Sanitary Commissions, and of the Commission which sat on Westminster Bridge. He very seldom addressed the House, and then only on matters relating to engineering. The last occasions on which

he spoke were on the Suez Canal and the cleansing of the Serpentine. Besides constructing the railway between Alexandria and Cairo, he was consulted, like his father, by the King of Belgium as to the railways of that country; and he was made Knight of the Order of Leopold, because of the improvements which he had made in locomotive engines, so much to the advantage of the Belgian system of inland transit. He was consulted by the King of Sweden as to the railway between Christiana and Lake Miösen, and in consideration of his services was decorated with the Grand Cross of the Order of St. Olaf. He also visited Switzerland, Piedmont, and Denmark, to advise as to the system of railway communication best suited for those countries. At the Paris Exhibition of 1855, the Emperor of France decorated him with the Legion of Honor in consideration of his public services; and at home the University of Oxford made him a Doctor of Civil Laws. In 1855, he was elected President of the Institute of Civil Engineers, which office he held with honor and filled with distinguished ability for two years, giving place to his friend Mr. Locke at the end of 1857.

He was habitually careless of his health, and perhaps he indulged in narcotics to a prejudicial extent. Hence he often became "hipped," and sometimes ill. When Mr. Sopwith accompanied him to Egypt in the *Titania*, in 1856, he succeeded in persuading Mr. Stephenson to limit his indulgence in cigars and stimulants, and the consequence was that by the end of the voyage he felt himself, as he said, "quite a new man." Arrived at Marseilles, he telegraphed from thence a message to Great George Street, prescribing certain stringent and salutary rules for observance in the office there on his return. But he was of a facile, social disposition, and the old associations proved too strong for him. When he sailed for Norway in the autumn of 1859, though then ailing in health, he looked like a man who had still plenty of life in him. By the time he returned his fatal illness had seized him. He was attacked by congestion of the liver, which first developed itself in jaundice, and then ran into dropsy, of which he died on the 12th of October, in the fifty-sixth year of his age. He was buried by the side of Telford in Westminster Abbey, amid the departed great men of his country, and was attended to his resting-place by many of the intimate friends of his boyhood and his manhood. Among those who assembled round his grave were some of the greatest men of thought and action in England, who embraced the sad occasion to pay the last mark of their respect to this illustrious son of one of England's greatest working men.

It would be out of keeping with the subject thus drawn to a conclusion to pronounce any panegyric on the character and achievements of George and Robert Stephenson. These, for the most part, speak for themselves; and both were emphatically true men, exhibiting in their lives many valuable and sterling qualities.

No beginning could have been less promising than that of the elder Stephenson. Born in a poor condition, yet rich in spirit, he was from the first compelled to rely upon himself, every step of advance which he made being conquered by patient labor. Whether working as a brakeman or an engineer, his mind was always full of the work in hand. He gave himself thoroughly up to it. Like the painter, he might say that he had become great "by neglecting nothing." Whatever he was engaged upon, he was as careful of the details as if each were itself the whole. He did all thoroughly and honestly. There was no "scamping" with him. When a workman, he put his brains and labor into his work; and when a master, he put his conscience and character into it. He would have no slop-work executed merely for the sake of profit. The materials must be as genuine as the workmanship was skillful. The structures which he designed and executed were distinguished for their thoroughness and solidity; his locomotives were famous for their durability and excellent working qualities. The engines which he sent to the United States in 1832 are still in good condition; and even the engines built by him for the Killingworth Colliery, upward of thirty years since, are working there to this day. All his work was honest, representing the actual character of the man.

He was ready to turn his hand to any thing—shoes and clocks, railways and locomotives. He contrived his safety-lamp with the object of saving pitmen's lives, and periled his own life in testing it. With him to resolve was to do. Many men knew far more than he, but none was more ready forthwith to apply what he did know to practical purposes. It was while working at Willington as a brakeman that he first learned how best to handle a spade in throwing ballast out of the ship's holds. This casual employment seems to have left upon his mind the most lasting impression of what "hard work" was; and he often used to revert to it, and say to the young men about him, "Ah, ye lads! there's none o' ye know what *wark* is." Mr. Gooch says he was proud of the dexterity in handling a spade which he had thus acquired, and that he has frequently seen him take the shovel from a laborer in some railway cutting, and show him how to use it more deftly in filling wagons of earth, gravel, or sand.

In manner, George Stephenson was simple, modest, and unassuming, but always manly. He was frank and social in spirit. When a humble workman, he had carefully preserved his sense of self-respect. His companions looked up to him, and his example was worth much more to many of them than books or schools. His devoted love of knowledge made his poverty respectable, and adorned his humble calling. When he rose to a more elevated station, and associated with men of the highest position and influence in Britain, he took his place among them with perfect self-possession. They wondered at the quiet ease and simple dignity of his deportment; and men in

the best ranks of life have said of him that "he was one of Nature's gentlemen."

Probably no military chiefs were ever more beloved by their soldiers than were both father and son by the army of men who, under their guidance, worked at labors of profit, made labors of love by their earnest will and purpose. True leaders of men and lords of industry, they were always ready to recognize and encourage talent in those who worked for and with them. Thus it was pleasant, at the openings of the Stephenson lines, to hear the chief engineers attributing the successful completion of the works to their assistants; while their assistants, on the other hand, ascribed the principal glory to their chiefs.

George Stephenson, though a thrifty and frugal man, was essentially unsordid. His rugged path in early life made him careful of his resources. He never saved to hoard, but saved for a purpose, such as the maintenance of his parents or the education of his son. In his later years, he became a prosperous and even a wealthy man; but riches never closed his heart, nor stole away the elasticity of his soul. He enjoyed life cheerfully, because hopefully. When he entered upon a commercial enterprise, whether for others or for himself, he looked carefully at the ways and means. Unless they would "pay," he held back. "He would have nothing to do," he declared, "with stock-jobbing speculations." His refusal to sell his name to the schemes of the railway mania—his survey of the Spanish lines without remuneration—his offer to postpone his claim for payment from a poor company until their affairs became more prosperous, are instances of the unsordid spirit in which he acted.

Another marked feature in Mr. Stephenson's character was his patience. Notwithstanding the strength of his convictions as to the great uses to which the locomotive might be applied, he waited long and patiently for the opportunity of bringing it into notice; and for years after he had completed an efficient engine, he went on quietly devoting himself to the ordinary work of the colliery. He made no noise nor stir about his locomotive, but allowed another to take credit for the experiments on velocity and friction which he had made with it upon the Killingworth railroad. By patient industry and laborious contrivance, he was enabled, with the powerful help of his son, almost to do for the locomotive what James Watt had done for the condensing engine. He found it clumsy and inefficient, and he made it powerful, efficient, and useful. Both have been described as the improvers of their respective engines; but, as to all that is admirable in their structure or vast in their utility, they are rather entitled to be described as their inventors. They have both tended to increase indefinitely the mass of human comforts and enjoyments, and to render them cheap and accessible to all. But Stephenson's invention, by the influence which it is daily exercising upon the civilization of the world, is even more remarkable than that of Watt, and is

calculated to have still more important consequences. In this respect it is to be regarded as the grandest application of steam power that has yet been discovered.

George Stephenson's powers of conversation were very great. He was so thoughtful, original, and suggestive. There was scarcely a department of science on which he had not formed some novel and sometimes daring theory. Thus Mr. Gooch, his pupil, who lived with him when at Liverpool, informs us that, when sitting over the fire, he would frequently broach his favorite theory of the sun's light and heat being the original source of the light and heat given forth by the burning coal. "It fed the plants of which that coal is made," he would say, "and has been bottled up in the earth ever since, to be given out again now for the use of man." His son Robert once said of him, "My father flashed his bull's eye full upon a subject, and brought it out in its most vivid light in an instant: his strong common sense and his varied experience, operating on a thoughtful mind, were his most powerful illuminators."

The Bishop of Oxford related the following anecdote of him at a recent public meeting in London: "He heard the other day of an answer given by the great self-taught man, Stephenson, when he was speaking with something of distrust of what were called competitive examinations. Stephenson said, 'I distrust them for this reason—they will lead, it seems to me, to an unlimited power of cram;' and he added, 'Let me give you one piece of advice—never to judge of your goose by its stuffing!'"

George Stephenson had once a conversation with a watchmaker, whom he astonished by the extent and minuteness of his knowledge as to the parts of a watch. The watchmaker knew him to be an eminent engineer, and asked how he had acquired so extensive a knowledge of a branch of business so much out of his sphere. "It is very easily explained," said Stephenson; "I worked long at watch-cleaning myself, and when I was at a loss, I was never ashamed to ask for information."

His hand was open to his former fellow-workmen whom old age had left in poverty. To poor Robert Gray, of Newburn, who acted as his brideman on his marriage to Fanny Henderson, he left a pension for life. He would slip a five-pound note into the hand of a poor man or a widow in such a way as not to offend their delicacy, but to make them feel as if the obligation were all on his side. When Farmer Paterson, who married a sister of George's first wife, Fanny Henderson, died and left a large young family fatherless, poverty stared them in the face. "But ye ken," said our informant, "*George struck in fayther for them.*" And perhaps the providential character of the act could not have been more graphically expressed than in these simple words.

On his visit to Newcastle, he would frequently meet the friends of his early days, occupying very nearly the same station in life, while

he had meanwhile risen to almost world-wide fame; but he was not less hearty in his greeting of them than if their relative position had remained the same. Thus, one day, after shaking hands with Mr. Brandling on alighting from his carriage, he proceeded to shake hands with his coachman, Anthony Wigham, a still older friend, though he only sat on the box.

Robert Stephenson inherited his father's kindly spirit and benevolent disposition, and almost worshiped his father's memory; he was ever ready to attribute to him the chief merit of his own achievements as an engineer. "It was his thorough training, his example, and his character, which made me the man I am."

In society Robert Stephenson was simple, unobtrusive, and modest, but charming and even fascinating in an eminent degree. Sir John Lawrence has said of him that he was, of all others, the man he most delighted to meet in England—he was so manly, yet gentle, and withal so great. While admired and beloved by men of such caliber, he was equally a favorite with women and children. He put himself upon the level of all, and charmed them no less by his inexpressible kindliness of manner than by his simple yet impressive conversation.

His great wealth enabled him to perform many generous acts in a right noble and yet modest manner, not letting his right hand know what his left hand did. Both father and son were offered knighthood, and both declined it.

As respects the immense advantages of railways to mankind, there can not be two opinions. They exhibit, probably, the grandest organization of capital and labor that the world has yet seen. Although they have unhappily occasioned great loss to many, the loss has been that of individuals, while, as a national system, the gain has already been enormous. As tending to multiply and spread abroad the conveniences of life, opening up new fields of industry, bringing nations nearer to each other, and thus promoting the great ends of civilization, the founding of the railway system by George Stephenson and his son must be regarded as one of the most important events, if not the very greatest, in the first half of this nineteenth century.

THE STEAM-ENGINE.

DO not be startled, dear reader of biographies, at the subject pressed upon us for our present sketch, albeit our work is a volume of biographies. We hear much of the iron age, the golden age, the age of steam, etcetera, but can any one tell us when steam was born, or when it will cease to be? Manifestly then, we are, at least apparently, unequal to the task in hand. Many may almost remember the time when "all the steam came from grand-ma's kettle;" but our boilers are getting large now, and frequently burst and destroy us poor humans. Thus far our biographical sketches have been of *men*, high in the scale of mental power and mechanical genius; men of brains and spirit. Out of their brains and spirit, the great, may we say undying, life of the STEAM-ENGINE was first spoken, and then wrought into power. We know its spirit, we can in some degree measure its power; we have felt and seen its manifestations of strength; we know its frame; its thews, its sinews, are of iron, and we have all felt the pulsations of its Titan heart; and so we move on to detail somewhat more of its life and sources of power than has in previous sketches been made clear. There are many circumstances attending this extraordinary piece of mechanism which impart to it an interest universally felt; whether we regard the details of its structure and operation, the physical principles which it calls into play, or the beautiful contrivances by which these physical principles are rendered available.

The limnings thus far presented to our readers are, with two exceptions, biographies of men out of whose lives was evolved, so to speak, the Life of the Steam-Engine, and it is not a little remarkable perhaps, that in nearly every instance these individuals began their speculations and investigations into steam—this dormant element of strength—in districts where the food for our gigantic motive-power lay treasured in Nature's great store-houses, of limitless extent; ready to feed the monster, from the day of its birth to the day of its death; which for aught that appears will occur at the end of time.

Mr. Phillips, the eminent Professor of Geology, in the University of Oxford, remarks that, "coal, since it has been applied to the steam-engine, is really hoarded power applicable to almost every purpose which human labor, directed by ingenuity, can accomplish." He then goes on to remark, with the pride of a genuine Briton, "It is the possession of her coal-mines which has rendered Britain in relation to the whole world, what a city is to the rural district which surrounds it—the producer and dispenser of the various products of art and industry. Our coal-fields are vastly more precious to us than would have been mines of the precious metals, like those of Peru and Mexico." If the latter statement be true of Britain it must be true of the United States also, even to a much greater extent.

According to Mr. Hunt, the keeper of the Mining Records of Britain, the coal area of the British Islands is 12,800 square miles, or one-tenth of the whole surface; according to the same authority, the proportion in the United States is still greater; the coal area being two-ninths of the whole surface. Scotland possesses the largest coal-field in Britain—1,600 square miles in the basin of the Forth and Clyde; this field is very rich in iron as well as coal. Between the Tweed and the Trent, in the north of England, there are nearly 10,000 square miles.

As already suggested in this connection it was in one of these districts that Watt brought forth his almost, if not quite perfect, *condensing engine*. On the Forth and Clyde Canal was the theater for Symington's steam-boat. Near Newcastle—the Newcastle of coals—the Stephensons grew to maturity, connected with those great collieries; and there, too, grew to full development of monstrous power and bird-like speed, their giant pet, the locomotive. On the Schuylkill and the Delaware successfully experimented Oliver Evans and John Fitch; here, too, on or near the great anthracite coal-fields of Pennsylvania, Robert Fulton first saw the light, and noted the development of steam-power, to which he has allied his name for all time.

We propose now to see what the steam-engine, well fed and watered, can do; in the language of Dr. Lardner, "Coals are by the steam-engine, made to spin, weave, dye, print, and dress silks, cottons, woollens, and other cloths; to make paper, and print books upon it, when made, to express oil from the olive [aye, we may add, and from cotton-seed too, which is largely taking the place of the oil from the olive, for which it is sold in all the markets of the world], and wine from the grape; to draw up metal from the bowels of the earth; to pound and smelt it, to melt and mold it, to forge it, to roll it, and fashion it into every desirable form; to transport these manifold products of its own labor to the doors of those for whose convenience they are produced; to carry persons and goods over water and land, from town to town, and country to country, with a speed as much exceeding the ordinary wind, as the ordinary wind exceeds that of a common pedestrian."

"Such are the virtues, such the powers, which the steam-engine, with its rotary or continuously circular motion, as brought into being by Watt, has conferred upon COALS. The means of calling these powers into activity are supplied by a substance which nature has happily provided in unbounded quantity in every part of the earth; and, though it has no price, it has inestimable value. This substance is water. A pint of water may be evaporated by two ounces of coals. In its evaporation it swells into two hundred and sixteen gallons of steam, with a mechanical force sufficient to raise a weight of thirty-seven tons a foot high. The steam thus produced has a pressure equal to that of common atmospheric air; and by allowing it to expand by virtue of its elasticity, a further mechanical force may be obtained at least equal in amount to the former. A pint of water, therefore, and two ounces of common coal, are thus rendered capable of doing as much work as is equivalent to seventy-four tons raised a foot high.

"The circumstances under which the steam-engine is worked on a railway are not favorable to the economy of fuel; nevertheless, a pound of coke burned in a locomotive-engine will evaporate about five pints of water. In their evaporation, they will exert a mechanical force sufficient to draw two tons weight on the railway a distance of one mile in two minutes. Four horses, working in a stage-coach on a common road, are necessary to draw the same weight the same distance in six minutes.

"A train of cars, weighing about eighty tons, and transporting 240 passengers with their luggage, has been taken from Liverpool to Birmingham, and thence back to Liverpool, the trip each way taking about four and a half hours, stoppages included—the distance being 95 miles. This double journey of 190 miles is effected by the mechanical force produced from the combustion of four tons of coke, valued at about 5*l*. To carry, in England, the same number of passengers daily between the same places, by stage coaches, would require 20 vehicles and an establishment of 3,800 horses, with which the journey would be performed both ways in about twelve hours, stoppages included.

"The circumference of the earth measures 2,500 miles; and if it were begirt with an iron railway, such a train as that described carrying 240 passengers would be drawn round it by the combustion of about thirty tons of coke, and the circuit would be accomplished in five weeks."

Capt. Savery contrived his engine, in 1698, with especial reference to the drainage by pumping of the deep mines of England, and it was used mainly for this purpose. Indeed, it is necessary to recollect that, notwithstanding the extensive and various applications of steam-power in the arts and manufactures, up to the time when Watt got his patent extended in 1775, the steam-engine had never been employed for any other purpose than that of raising water by working pumps.

The water of streams was used over and again, in the manufacturing

districts of England, by being pumped up, and thus re-supplied to water-wheels driving machinery. The motion required, therefore, was merely an upward force, such as is necessary to elevate the piston of a pump.

"In the drainage of the Cornish mines now, the economy of fuel is much attended to, and coal is made to do more there than elsewhere. A bushel of coal usually raises 40,000 tons of water a foot high; but on some occasions it has raised 60,000 tons a foot high. Let us take its labor at 50,000 tons. A horse, worked in a fast stage-coach, pulls against an average resistance of about a quarter of a ton weight. Against this he is able to work at the usual speed through about 8 miles daily; his work is, therefore, equivalent to about five hundred tons raised one foot. A bushel of coals, as used in Cornwall, therefore, performs as much labor as a day's work of one hundred such horses."

"When steam-engines were first brought into use, they were commonly applied to work pumps for mills, which had previously been worked or driven by horses. In forming their contracts, the first steam-engine builders found themselves called upon to supply engines for executing the same work as before had been executed by some certain number of horses. It was, therefore, convenient, and indeed necessary, to be able to express the performance of these machines by comparison with the animal power to which manufacturers, miners, and others, had been so long accustomed. When an engine, therefore, was capable of performing the same work, in a given time, as any given number of horses of average strength usually performed, it was said to be an engine of so many horses' power. It was, however, a considerable period before this term came to have a definite meaning. Mr. Smeaton estimated that a horse of average strength, working for eight hours a day, was capable of performing a quantity of work equal in its mechanical effect to 22,916 tons raised one foot per minute, while Desaguliers estimated the same power at 27,500 tons. The difference between these estimates probably arose from their being made from the performances of different classes of horses."

"Messrs. Boulton and Watt caused experiments to be made with the strong horses used in the breweries in London, and from the results of these trials they assigned 33,000 pounds, raised one foot per minute, as the value of a horse's power. This is the unit of engine power now universally adopted. The steam-engine is no longer used to replace the power of horses, and, therefore, no contracts are based upon this comparison. The term horse-power, then, means simply the ability of the engine to move 33,000 pounds through one foot per minute."

"The conversion of a given volume of water into steam is productive of a certain definite amount of mechanical force, this amount depending on the pressure under which this water is evaporated, and

the extent to which the expansive principle is used in working the steam. It is evident that this amount of mechanical effect is a major limit, which can not be exceeded by the power of the engine.

"What is known as the duty or service of engines varies according to their form and magnitude, the circumstances under which they are worked, and the purposes to which they are applied. In double-acting engines, working without expansion, the coal consumed per nominal horse-power per hour varies from 7 to 12 lbs. An examination of the steam-logs of several government steamers, made a few years since, gave as the average consumption of fuel at that time of the best class of marine engines, about 8 lbs. per nominal horse-power per hour. Out of fifteen atmospheric engines working at Newcastle-on-Tyne, in 1769—the date of Watt's earliest discoveries—the yearly *duty* of the poorest was shown to be 3,220,000 lbs., and of the best 7,440,000 lbs. In 1772, Smeaton began his improvements on the atmospheric-engine, and raised the duty to 9,450,000, but when Watt, in 1776, had obtained a duty of 21,600,000, Smeaton acknowledged that Watt's engines gave a duty double that of his own. From 1779 to 1798, Watt increased that of his engines from 23,400,000 to 27,000,000. The engine which accomplished the last was under the care of Mr. Murdock, at Cornwall, and was by Mr. Watt pronounced *perfect*. [Mr. Murdock will be remembered as the ingenious producer of a model locomotive heated by a spirit-lamp, which so frightened the village parson upon a dark evening, as it moved rapidly down upon him on the side walk.] Mr. Watt thought further improvement in the duty of his steam-engine could not be expected. Yet in twenty years afterward the best engine had attained to an average duty of 40,000,000 lbs., and in forty years it was about 84,000,000 lbs. per year. How impossible, then, for even the most sagacious to foresee the results of mechanical improvement."

We now revert again to fuel, or the food of what the men of the Newcastle collieries originally called the "Iron Horse." For this home of the Stephensons, near the close of the thirteenth century Henry III. gave a charter, granting license to the burgesses of Newcastle to dig for coal. In 1281—just five hundred years before George Stephenson was born, at Wylam Colliery—Newcastle is said to have had a considerable trade in this article, and about this time the use of coal had commenced in London, by smiths, brewers, dyers, soap-boilers, etc. A notion got abroad that the smoke was highly injurious to the public, and in 1316, on petition of Parliament his majesty Edward I. issued a proclamation prohibiting its use, on the ground of its being an intolerable nuisance. Notwithstanding this, and the fact that more rigorous means were resorted to, its use continued progressively to gain ground. Since the reign of Charles I., the use of coal in London has been universal, to the exclusion of nearly all other articles of fuel. The coals of Britain are almost wholly bituminous, similar to the coals taken out

of the Western Alleghanies and generally mined in the Mississippi Valley. The Anthracite Coal, of Pennsylvania, is nearly pure carbon, igniting with some difficulty, and giving out intense heat during combustion. It is almost exclusively used in the cities and towns of the Northern Atlantic States, and wherever wood is not cheaper, in that part of the Union. Its adaptation for use in blast furnaces makes it immensely valuable to the great home interest in iron, of the Keystone State; and it yields a rich revenue to her citizens from the demand for it in the large manufacturing and commercial districts of the Eastern States, while it is in growing request wherever in the South and West a cleaner fuel is preferred to the smoky and sooty coals of the great central valley. Strangely enough, it was scarcely known to exist in this country fifty years ago, and now the tonnage engaged in transporting it—to a minor extent by the old canals—on the railroads of the East is of enormous magnitude, as will appear from the reports of the Philadelphia and Reading Railroad, the Lehigh Valley, the Delaware and Lackawanna, the New Jersey Central, the Pennsylvania Central, and other roads. A half century ago, this coal, as discovered in Ireland, and in South Wales, was considered to be incombustible refuse and was thrown away, but now it is there thought to be of the very highest value for furnace purposes.

In this running and brief history of coal, we not only discover the *food* for our iron horse developed from the great store-houses of nature in a rapidly increasing measure, just as the creature is developed into a perfect life, but we also discover the *work* it is being called upon to perform. Its family is growing by thousands a year, while its habitat, the railroads, are multiplying in endless ratio. The iron steamers of the sea, too, and of the great inland routes of commerce, are, and are to be, insatiable in their demands for this great generator of strength for iron arms and sinews. Europeans, if not Americans, are *demonstrating* that iron steam-ships can carry much cheaper than sailing vessels, the time taken for trips considered, because vessels propelled by steam are gradually superseding sailing vessels. It is probable that coal will ere long be included among those articles that are reckoned as contraband of war. Now that steam is destined to play an important part in naval warfare, the coal by which steam is produced is certainly entitled to a prominent place among *munitions de guerre*.

Nearly all the coal consumed in London was taken there by coastwise vessels from Newcastle and elsewhere forty years ago (1832), while within that period the transportation into London, by railways alone, has grown to be equal to that taken by vessels, and the amount carried by the latter is fifty per cent in excess of what it was then; mean-time, its average price has not increased there. In this no mention is made of the tonnage required on railways for distributing coal to the manufacturing and other districts of Britain. Herein may be seen outlines of a future traffic, huge in proportions, yet to be ac-

quired by the railroads of the Western States of the Union, not to name others.

The importation into the United States of what has been for many years known on the Atlantic coast as "Liverpool coal" has always been considerable; so late as 1865 the amount was 134,000 tons; an ugly fact in view of our greater supplies. The productive coal measures of the United States exceed those of all the rest of the world, as at present known, and the greatest fields of coal in the Union are in the districts of the Mississippi Valley, already pointed out.

Coal for most purposes is much better than wood; but, in fact, the two, although in appearance so different, are, in their ultimate composition, very nearly allied. They both have for their basis or chief ingredient the substance called by the chemists *carbon*, and their chief other ingredient, the substance called *hydrogen*, which, when separated, exists in the form of gas. The hydrogen is easily driven away or volatilized from either coal or wood, by heating in a close place; and when it is caught and preserved, it forms the gas now used to light the streets and buildings of our cities and larger towns. What remains of coal after being so treated is the substance called *coke*, referred to in this article as used in running locomotives on the English railways; and what remains of wood, similarly treated, is the substance called *charcoal;* both being nearly pure carbon, but differing as to the states of compactness. This kindred nature of coal and wood does not surprise us when the fact is known that much of our coal is really transformed wood; many coal-mines being evidently the remains of antediluvian forests, swept together in the course of terrestrial changes, and afterward solidified to the state now seen. The species of the plants or trees which formed them are often quite apparent. The extensive beds of peat moss or turf, now existing on the surface of the earth consist chiefly of vegetable remains in an early stage of change, which finally terminates in the formation of coal.

The phenomenon of common fire or combustion is merely the fuel being chemically dissolved in the air of the atmosphere. If the fuel has nothing volatile in it, as is true of pure carbon, and nearly true of coke and charcoal, it burns with the appearance of red-hot stones; but if there be an ingredient, as hydrogen, which on being heated, readily assumes the form of air, that ingredient dilates before burning, and in the act produces the more bulky incandescence called flame.

The two great purposes which combustion serves to man are to give light and heat. By the former he may be said to lengthen considerably the duration of his natural existence; for he converts a portion of the almost useless night into what, for many ends, serves him as well as day; and by the latter, besides converting winter into any climate—within doors—which he desires, he is enabled to effect most important mutations in many of the substances which nature offers for his use; and since the invention of

the steam-engine, he makes heat perform a great and constantly increasing proportion of the work of society. From these considerations may be perceived the importance of having fire at command; and as the cheapest means of commanding fire, of having abundance of coal. By it our dwellings are lighted and heated, and thus made more comfortable; with it the steam-engine may be fed, labor lifted from our shoulders and taken from our hands, and we may be enabled comfortably to go with railroad and steamer speed to the ends of the earth.

From an admirable article by Robert Hunt, F. R. S., we make the following extract on

"COAL AS A RESERVOIR OF POWER."

"The sun, according to the philosophy of the day, is the great store-house of Force. All the grand natural phenomena are directly dependent upon the influence of energies which are poured forth without intermission from the central star of our system. Under the influences of light, heat, actinism, and electricity, plants and animals are produced, live, and grow, in all their infinite variety. Those physical powers, or, as they were formerly called, those imponderable elements, have their origin in one or other of those mysterious zones which envelop the orb of day, and become evident to us only when mighty cyclones break them up into dark spots. Is it possible to account for the enormous amount of energy which is constantly being developed in the sun? This question may be answered by saying that chemical changes of the most intense activity are discovered to be forever progressing, and that to these changes we owe the development of all the physical powers with which we are acquainted. In our laboratory we establish, by mechanical disturbance, some chemical phenomenon, which becomes evident to our senses by the heat and light which are developed, and we find associated with them the principle which can set up chemical change and promote electrical manifestations. We have produced combustion, say, of a metal, or of a metallic compound, and we have a flame of a color which belongs especially to the substance which is being consumed. We examine a ray of light produced by that flame by passing it through a prism, and this analysis informs us that colored bands, having a fixed angle of refraction, are constant for that especial metal. Beyond this, research acquaints us with the fact that, if the ray of light is made to pass through the vapor of the substance which gives color to the flame, the lines of the spectrum which were chromatic become dark and colorless. We trap a ray of sunlight, and we refract it by means of a spectroscope—an instrument giving results which we already have seen described*—when we detect the same lines as those which we have discovered in our artificial flame. We pursue this very in-

* *Popular Science Review*, vol. i., pp. 210–214.

teresting discovery, and we find that several metals which give color to flame, and produce certain lines, when subjected to spectrum analysis, are to be detected in the rays of the sun. Therefore our inference is, that some substances, similar to the terrestrial bodies, with which we are familiar, are actually undergoing a change in the sun, analogous to those changes which we call combustion ; and, more than this, we argue that the high probability is, that all solar energies are developed under those conditions of chemical change—that, in fact, the sun is burning, and while solar matter is changing its form, Force is rendered active, and as ray-power passes off into space as light, heat, etc., to do its work upon distant worlds, and these forms of Force are expended in doing the work of development *on* those worlds. This idea—theory—call it what you may—involves of necessity the waste of energy in the sun, and we must concede the possibility of the blazing sun's gigantic mass becoming eventually a globe of dead ashes, unless we can comprehend some method by which energy can be again restored to the inert matter. Certain it is that the sun has been shining thousands of years, and its influence on this earth we know to have been the production of organized masses, absorbing the radiant energies, in volumes capable of measurement. On this earth, for every equivalent of heat developed, a fixed equivalent of matter has changed its form ; and so likewise is it with regard to the other forces. On the sun, in like manner, every cubic mile of sunshine represents the change of form of an equivalent of solar matter, and that equivalent of matter is no longer capable of supplying Force, unless by some conditions, beyond our grasp at present, it takes up again that which it has lost. That something of this kind must take place is certain. The sun is *not burning out.* After the lapse of thousands of years we have the most incontrovertible evidence that the light of to-day is no less brilliant now than it was when man walked amid the groves of Eden. We may venture farther back into the arcana of time, and say that the sun of the past summer (1872) has shone with splendor equal to the radiant power which, myriads of ages ere yet man appeared on this planet, stimulated the growth of those luxuriant forests which perished to form those vast beds from which we derive our coal. Not a ray the less is poured out in any hour of sunshine ; not a grain-weight of matter is lost from the mass of the sun. If either the sunshine were weakened, or the weight of the vast globe diminished, the planets would vary in their physical conditions, and their orbits would be changed. There is no evidence that either the one or the other has resulted. Let us see if we can guess at any process by which this stability of the solar system is maintained.

It was first shown by Faraday, in a series of experimental investigations which may be regarded as the most beautiful example of inductive science with which the world has been favored since Bacon promulgated his new philosophy, that the quantity of electricity con-

tained in a body was exactly the quantity which was necessary to decompose that body. For example, in a voltaic battery—of zinc and copper plates—a certain fixed quantity of electricity is eliminated by the oxidation of a portion of the zinc. If, to produce this effect, the oxygen of a given measure of water—say a drop—is necessary, the electricity developed will be exactly that which is required to separate the gaseous elements of a drop of water from each other. An equivalent of electricity is developed by the oxidation of an equivalent of zinc, and that electricity is required for the decomposition of an equivalent of water, or the same quantity of electricity would be equal to the power of effecting the re-combination of oxygen and hydrogen, into an equivalent of water. The law which has been so perfectly established for electricity is found to be true of the other physical forces. By the combustion—which is a condition of oxidation—of an equivalent of carbon, or of any body susceptible of this change of state, exact volumes of light and heat are liberated. It is theoretically certain that these equivalents of light and heat are exactly the quantities necessary for the formation of the substance from which those energies have been derived. That which takes place in terrestrial phenomena is, it is highly probable, constantly taking place in solar phenomena. Chemical changes, or disturbances analogous to them, of vast energy, are constantly progressing in the sun, and thus is maintained that unceasing outpour of sunshine which gladdens the earth, and illumines all the planets of our system. Every solar ray is a bundle of powerful forces; light, the luminous life-maintaining energy, giving color to all things; heat, the calorific power which determines the conditions of all terrestrial matter; actinism, peculiarly the force which produces all photographic phenomena; and electricity regulating the magnetic conditions of this globe. Combined in action, these solar radiations carry out the conditions necessary to animal and vegetable organization, in all their varieties, and *create* out of a chaotic mass forms of beauty rejoicing in life.

To confine our attention to the one subject before us. Every person knows that, to grow a tree or shrub healthfully, it must have plenty of sunshine. In the dark we may force a plant to grow, but it forms no woody matter, it acquires no color; even in shade it grows slowly and weak. In sunshine it glows with color, and its frame is strengthened by the deposition of woody matter eliminated from the carbonic acid of the air in which it grows. A momentary digression will make one point here more clear. Men and animals live by consuming the products of the vegetable world. The process of supporting life by food is essentially one of combustion. The food is burnt in the system, developing that heat which is necessary for life, and the living animal rejects, with every expiration, the combinations, principally carbonic acid, which result from this combustion. This carbonic acid is inhaled by the plant; and, by its vital power, excited by sunshine, it is decomposed; the carbon forms the ligneous structure

of the plant, and the oxygen is liberated to renew the healthful condition of the atmosphere. Here we see a sequence of changes analogous to those which have been shown to be a law of electricity.

Every equivalent of matter changing form in the sun sends forth a measured volume of sunshine, charged with the organizing powers as potential energies. These meet with the terrestrial matter which has the function of living, and they expend themselves in the labor of producing a quantity of wood, which represents the equivalent of matter which has changed form in the sun. The light, heat, chemical and electrical power of the sunshine have produced a certain quantity of wood, and these physical energies have been absorbed—used up—in the production of that quantity. Now, we learn that a cube of wood is the result of a fixed measure of sunshine; common experience teaches us that, if we ignite that wood, it gives out, in burning, light and heat; while a little examination proves the presence of actinism and electricity in its flame. Philosophy teaches us that the powers set free in the burning of that cube of wood are exactly those which were required for its growth, and that, for the production of it, a definite equivalent of matter changed its form on a globe ninety millions of miles distant from us.

Myriads of ages before man appeared—the monarch of this world—the sun was doing its work. Vast forests grew, as they now grow, especially in the wide-spread swamps of the tropics, and, decaying, gathered into thick mats of humus-like substance. Those who have studied all the conditions of a peat-morass, will remember how the ligneous matter loses its woody structure in depth—depth here representing time—and how at the bottom a bituminous or coaly matter is not unfrequently formed. Some such process as this, continued through long ages, at length produced those extensive beds of coal which are so distinguishingly a feature of the British and American coal-fields. At a period in geological time, when an Old Red Sandstone land was washed by ocean waves highly charged with carbonic acid, in which existed multitudinous animals, whose work in Nature was to aid in the building up masses of limestone-rock, there prevailed a teeming vegetation from which have been derived all the coal-beds of the British Isles. Our space will not allow of any inquiry into the immensity of time required for the growth of the forests necessary for the production of even a single seam of coal. Suffice it to say that, within one coal-field, we may discover coal-beds to the depth of 6,000 feet from the present surface. The section of such a coal-field will show us coal and sandstone, or shale, alternating again and again—a yard or two of coal and hundreds of feet of shale or sandstone—until we come to the present surface, every one of those deeply-buried coal-beds having been at one time a forest, growing under the full power of a brilliant sun, the result of solar forces, produced then, as now, by chemical phenomena taking place in the sun itself. Every cubic yard of coal in every coal-bed is the result of a very slow, but

constant, change of a mass of vegetable matter; that change being analogous to the process of rotting in a large heap of succulent plants. The change has been so slow, and continued under a constantly-increasing pressure, that but few of the gaseous constituents have escaped, and nearly all those physical forces which were used in the task of producing the woody matter of the plant have been held prisoners in the vegetable matter which constitutes coal. How vast, then, must be the store of power which is preserved in the coal deposits of these islands!

We are now raising from our coal-pits nearly one hundred and ten millions of tons of coal annually. Of this quantity we are exporting to our colonial possessions and foreign parts about ten million tons, reserving nearly a hundred million tons of coal for our home consumption. Not many less than one hundred thousand steam-boilers are in constant use in these islands, producing steam—to blow the blast for smelting the iron ore; to urge the mills for rolling, crushing, and cutting with giant power; to twirl the spindle, and to urge the shuttle. For every purpose, from rolling cyclopean masses of metal into form to weaving silky textures of the most filmy fineness, steam is used, and this steam is an exact representative of the coal employed, a large allowance being made for the imperfections of human machinery. This requires a little explanation. Coal is a compound of carbon, hydrogen, oxygen, and nitrogen, the last two elements existing in quantities so small, as compared with the carbon, that they may be rejected from our consideration. The heat which we obtain in burning the coal is almost all derived from the carbon; the hydrogen in burning produces some heat, but for our purpose it is sufficient to confine attention to the carbon only.

One pound of pure coal yields, in combining with oxygen in combustion, *theoretically*, an energy equal to the power of lifting 10,808,000 pounds one foot high. The quantity of heat necessary to raise a pound of water one degree will raise 772 pounds one foot. A pound of coal burning should yield 14,000 units of heat, or $772 \times 14{,}000 = 10{,}808{,}000$ pounds, as above. Such is the theoretical value of a pound of pure coal. Many of our coal-seams are about a yard in thickness; several important seams are much thicker than this, and one well-known seam, the thick coal of South Staffordshire, is ten yards in thickness. This, however, concerns us no further than that it is useful in conveying to the mind some idea of the enormous reservoir of power which is buried in our coal formations. One square yard of coal from a yard-thick seam—that is, in fact, a cubic yard of coal—weighs about 2,240 pounds avoirdupois; the reserved energy in that cube of coal is equal to lifting 1,729,200 pounds one foot high. We are raising every year about 110,000,000 tons of coal from our coal-beds, each ton of coal being about a square yard. The heat of that coal is equal to a mechanical lifting power which it is scarcely possible to convey to the mind in any thing approaching to its reality.

If we say it is 190,212,000 millions we merely state an incomprehensible number. We may do something more than this, if we can convey some idea of the magnitude of the mass of coal which is raised annually in these islands.

The diameter of this globe is 7,926 miles, or 13,880,760 yards; therefore the coal raised in 1870 would make a solid bar more than eight yards wide and one yard thick, which would pass from east to west through the earth at the equator. Supposing such a mass to be in a state of ignition, we can perhaps imagine the intensity of its heat, and its capability, if employed in converting water into steam, of exerting the vast force which we have endeavored to indicate. It was intimated last year in the House of Commons, by a member of the coal commission, that the decision of that body, after a long and laborious inquiry, would be that there existed in our coal-fields a supply for about one thousand years at our present rate of consumption. We have therefore to multiply the above computation by 1,000 to arrive at any idea of the reserved power of our British coal-fields. What must it have been ere yet our coal deposits were disturbed! At the time of the Roman occupation coal was used in this country. In the ruins of Roman Uriconium coal has been found. Certainly up to the present time a quantity of not less than three thousand million tons of coal has been dug out of our carboniferous deposits and consumed. All this enormous mass of matter has been derived from vegetable organizations which have been built up by sunshine. The sun-rays which compelled the plants to grow were used by the plant, absorbed, imprisoned in the cells, and held there as an essential ingredient of the woody matter. The heat, light, actinism, and electricity, which are developed when we burn a lump of coal, represent exactly the quantity of those forces which were necessary to the growth of the vegetable matter from which that coal was formed. The sunshine of infinitely remote ages becomes the useful power of the present day.

Let it not, however, be supposed that we employ all the heat which is available in our coal. All our appliances, even the very best, are so defective that we lose far more than we use. A pound of pure coal should evaporate thirteen pounds of water; in practice a pound of coal does not evaporate four pounds, even in the most perfectly-constructed steam-boilers, with the most complete steam-engines, such as have been constructed for pumping water for the Chelsea and the other water-works upon the Thames.

Numerous attempts have been made to burn our coal so as to secure a more effective result than this. Still, with the best we allow more than one-half of the heat latent in the coal to escape us. The subtle element eludes our grasp—our charms are powerless to chain the sprite; he will not be bound to labor for us, but passes off into space, regardless of the human Prospero, whose wand of science he derides.

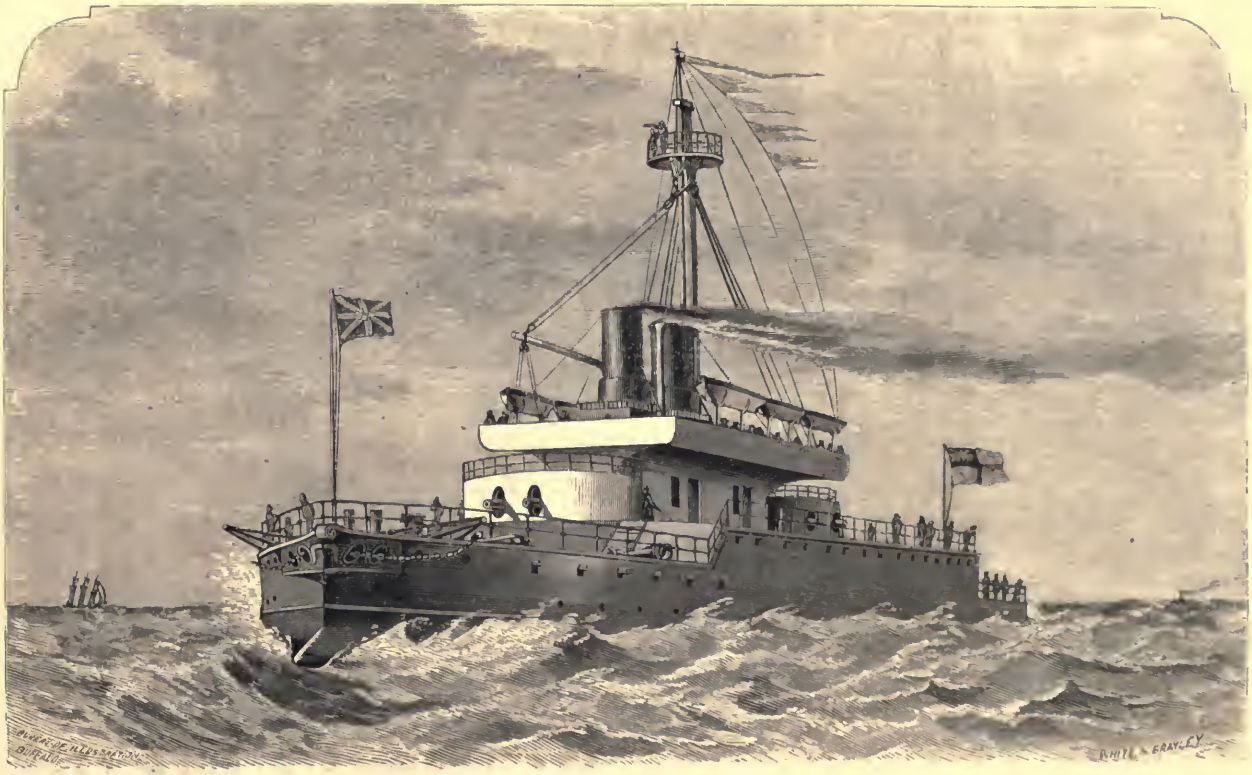
In conclusion, our philosophy has enabled us to determine the heat-value of our coal-fields, and to prove that all this heat has a solar origin. Our science has shown us that, although we can eliminate all this heat, we can not use it. There is an immense quantity constantly passing into space as radiant heat which we can not retain.

The circle of action between the vegetable and the animal world is a beautiful and a remarkable provision. The animal burns carbon and sends into the air carbonic acid (a compound of carbon and oxygen); the vegetable breathes that carbonic acid and decomposes it; the carbon is retained and the oxygen liberated in purity, to maintain the life and fire-supporting principle of the atmosphere. Changes similar to these may be constantly going forward in the sun, and producing those radiations which are poured forth in volumes, far beyond the requirements of all the planets of our system. Although there is probably some circle of action analogous to that which exists upon this earth, maintaining the permanency of the vegetable and animal world, still there must be a waste of energy, which must be resupplied to the sun.

May it not be that Sir Isaac Newton's idea—that the comets traversing space gather up the waste heat of the solar system, and eventually, falling into the sun, restore its power—is nearer the truth than the more modern hypothesis, that meteorites are incessantly raining an iron shower upon the solar surface, and by their mechanical impact reproducing the energy as constantly as it is expended?

THE WAR STEAMER "DEVASTATION,"

Of which we furnish a fine cut, is one of the later vessels built for the British navy. She was not designed for long cruises, but can make long voyages with the 1,800 tons of coal, which she is able to carry. Her hull is 285 feet long, with an extreme width of 58 feet, without the armor-plates and backings, which increase it to 62 feet 3 inches. Her armor-plates are 10, 12, and 14 inches in thickness. The two turrets measure each 24 feet 3 inches in their internal diameter, and are built up of five layers. Each turret carries two Frazer muzzle-loading rifled guns, of 35 tons each. She was built for a powerful fighting ship. "The engines are two pairs of driving twin screws, independently with a power of 800 horse, but can be made to work to seven times that amount."



War Steamer "Devastation."

SAMUEL F. B. MORSE.

SAMUEL F. B. MORSE died at his residence in west Twenty-Second Street, New York, on Tuesday, April 2d, 1872. If it be legitimate to measure a man by the magnitude of his achievements, by the boon he has conferred on the world, he, who gently folded his hands upon his breast that evening, and in Christian resignation bade farewell to earth, was the greatest man of the nineteenth century. He was the Napoleon of Peace. He could afford to leave to the warriors of his generation the turbulent pursuit of that which historians call glory, to become the apostle of that higher glory which men call Usefulness. Even in the whirl of battle and the bewildering zigzags of politics, the race, doubtless, does creep slowly onward toward a better destiny, but the chief crowns of honor will always be awarded to the scholars and inventors who give leisure and opportunity to the million, and make easier the hard work of every day.

The life of Professor Morse had been almost identical with the life of the republic. He was born on April 27th, 1791, during Washington's second term as President. We think of Shelly and Keats as poets of a distant past; yet Morse was born a year before Shelly, and five years before Keats, while their brilliant friend and eulogist, Byron, was only three years his senior. When Morse first opened his eyes, within sight of Bunker Hill, six of the presidents, whom he lived to see inaugurated, were not yet born. James Buchanan was a fortnight old. Napoleon Bonaparte was a lieutenant of artillery, and had not yet seen active service. Morse was a child when Robespierre held Paris in his bloody grasp; a lad at school before Napoleon won Marengo; an historical painter, struggling with poverty in England, before Napoleon was captured by his allied enemies. He lived under the administration of every one of the eighteen presidents; saw the republic grow from four to forty millions—from a weak and despised band of successful rebels, to one of the leading Powers of the earth; witnessed the struggle of slavery for conquest, and its triumph-

ant overthrow. Some of the grandest enterprises of philanthropy and some of the most important achievements of art were perfected within the zone of his life.

Samuel Finley Breese Morse came of good sturdy stock; a family blessed with patience and pluck, in the habit of struggling with adversity, and of overcoming it. Several of his nearest relatives were famous as authors and inventors. His father, Jedediah Morse, was known all over the English-speaking world as "the father of American geography." Born in Woodstock, Connecticut, in 1761, he was graduated from Yale in his twenty-second year, and was licensed to preach two years thereafter, having, meantime, printed a little 18mo geography for young ladies—the first American geography printed on this continent. Serving three years as tutor, he was in 1789 installed as pastor of the Congregational Church in Charlestown, Massachusetts. He preached on Sunday, and served God during the week by enlarging and improving his geography, making wide excursions through the States, and establishing a large correspondence, for the purpose of gathering information. He showed great vigor in obtaining correct surveys and statistics, and reliable knowledge of the character and customs of the people, the distribution of important staples, etc., and this work was pushed so assiduously, and his publications were so exhaustive, that Belknap, the historian, of New Hampshire, Hutchins, the geographer-general of the United States, and other gentlemen, graciously discontinued their projects of similar books, and surrendered all their materials to him. He was among the most active in securing the enactment of the original copyright law, and availed himself of its benefits, perhaps, in 1790. Some years later Noah Webster's first "American spelling-book" made its appearance. For thirty years, he remained master of the geographical field,—without a peer, almost with a rival,—and then he surrendered to his son Sidney.

Young Samuel speedily made a boy's acquaintance with Charlestown; participating in the village kite-flying festivals and hop-scotch tournaments, its mischief, its marbles, and its mumble-peg. He was a rather healthy, rugged, sturdy boy; and the success of his father's pet geography saved him from that tough tussle with poverty and hard work, in the midst of which most of the illustrious Americans of that generation fought their way through the district school. He had an easy time of it, on the whole. Earth seemed to the boy a tolerably pleasant planet to live on, and life did not assume the fabled aspect of the hyena to him till he arrived at mature years and walked into the arena to face it. His studies were prosecuted mostly under his father's direction; and they were successful, for he was only fifteen when, in 1806, he entered Yale College and took his place in the class which his father entered twenty-seven years before. Young as he was, his brother Sidney E., three years younger, was in the sophomore class, ahead of him, a brilliant precocious boy of twelve,

predestined by a fond mother to the pulpit, and dreaming the dreams which were to find fruition twenty years later, in the establishment of the New York *Observer*, for a long period, the most successful religious newspaper in America; and having now a larger circulation than hitherto, and thirty years later in the invention of the valuable art of Cerography, and, still later, of the Bathometer, for measuring the hitherto measureless depths of the sea.

Samuel was never quite so devout as Sidney, but he was a faithful and orderly student. He is also said to have been "somewhat eccentric." His principal eccentricity consisted in learning his lessons thoroughly and methodically. It was also known, however, that he had strong predilections for the natural sciences, and that his love of the fine arts amounted to a passion. One of the earliest proofs of his fondness for painting is still in the possession of his family; it is a pleasant group, in which the father and mother and the three sons, Samuel, Sidney, and Richard, are sketched, by a hand not yet skilled in art, in the prim and stately outward adornments worn at that day. He made himself familiar with the small private collections of pictures in New Haven at that early day, and even ventured on a trip to New York and Philadelphia, where he was entranced with the productions of those eminent Americans, Washington Allston, and Benjamin West. West was gloating over the wonders of the Apocalypse, and was covering his "redish-brown canvas" with ornate angels on impossible steeds; but the very audacity stirred young Morse's soul within him, and he resolved to be an artist.

Yet his love was divided. Having taken Nature for his sweetheart, he found her absorbing and exacting, developing new charms day by day. Professor Benjamin Silliman was instructor in chemistry, and Professor Day in philosophy, and under their guidance the young enthusiast found a new world in the laboratory. Traditions at Yale still tell of the perils encountered in his pursuit of knowledge, and how near he came to blowing up the Old South with a retort that exploded in his room.

The student also developed a strong fondness for mathematics, and in his junior year resolved to practice the profession of civil engineering as the work of his life. But he was only eighteen, and subject to rather sudden if not frequent changes of opinion.

Commencement-day arrived, and passed to the credit of the student. We do not know whether or not he won any of the honors of his class; but his success in life may be accepted as inferential proof that he was not the valedictorian. When Samuel Morse, A. B., aged eighteen, turned his back reluctantly upon the beloved laboratory, in 1810, Sidney Morse, A. B., aged fifteen, had been out of college a year, and was writing profound political treatises for the Boston magazines, on the perils that menaced the federal system from an undue multiplication of States! Once in print, of course, Sidney

resolved to become an author and editor. The touch of type is generally fatal.

The time had now arrived for Samuel to select his profession irrevocably. His father tried to increase the attraction which civil engineering seemed to possess for him, urging that it was at once respectable, honorable and lucrative, and that, in the new and expanding country, these terrestrial artists were sure to grow in power and usefulness. The number of competent civil engineers in the country at that time was small, for all constructions were comparatively rude, and George Stephenson, in England, was just being haunted by his first vague dreams of a railroad.

The career selected by the practical sire seemed to the ambitious youth too earthly. It did not sufficiently minister to his Æsthetic and literary taste. The incense of Silliman's laboratory still hung pleasantly about him, and his young eyes were full of the miracles of Benjamin West. The result of his reflections, under such circumstances, may easily be divined. He resolved to be a painter. His father argued the case, presented the obvious objections to the choice he had made, ridiculed his chimerical hopes, and resisted him gently when Samuel announced that he was going to Europe to study.

"Who ever knew an *artist* that amounted to any thing?" asked the successful geographer, contemptuously.

"The backers of Michael Angelo!" responded the boy proudly.

"Well, we'll see," rejoined the father; "go 'long your own way. I don't like it, but go along, and I'll give you a good outfit."

So during the next summer—the summer of 1811—he started for England in company with Allston, and under his protection. Allston had already won fame in London and on the continent as a great colorist, and had returned to his native country for a wife, and he was now doubtless glad to carry back as his protege the young student who had shown such enthusiastic admiration of his work.

The journey of Morse to Europe, at this time, was rendered doubly opportune, by the fact that the Philadelphia Quaker, Benjamin West, had succeeded Sir Joshua Reynolds in the Presidency of the Royal Academy, and George III was his munificent patron. The young man enjoyed the instruction of both Allston and West, and he entered zealously upon his studies. His imagination was less grotesque and fantastic than that of his teachers, and he had little penchant for what Allston admiringly calls "the magnificent and the awful." His treatment of historical and metaphorical subjects was quieter than theirs, and less vigorous. He immediately became acquainted with the young American, Charles Leslie, who afterward acquired renown as one of the first painters of England, and Leslie and Morse began the practice of their profession by painting portraits of each other.

Morse made rapid progress. If he took West for his model in drawing, and Allston in coloring—if he emulated West's industry

and Allston's genius—he could not have begun under happier auspices. During the next year he conceived the idea of his first pretentious composition—The Dying Hercules—and imitated Allston in first modeling the figure in clay. After six weeks of careful labor, the statue was finished, and submitted to West. The venerable artist, on entering the room, put on his spectacles, and, as he walked around the model, a look of genuine satisfaction beamed from his face. He rang for an attendant and summoned his son. "Look here, Raphael!" said he, in the presence of the artist, "did I not always tell you that every painter could be a sculptor?" We may imagine the delight of the student at such commendation. The same day his attention was called to the fact that the Adelphi Society of Arts had offered a prize for the best single figure in sculpture. The time for entries would expire within three days, but Morse seized the occasion and placed his piece with the thirteen others on exhibition. He took the prize, and received the gold medal from the hand of the Duke of Norfolk. He was evidently enjoying the sunshine. Spurred to larger "rivalry" by his success, he contended for the prize of the Royal Academy in historical painting: subject, "Judgment of Jupiter in the case of Apollo, Mapessa, and Idas." He finished his picture, but, before the exhibition, he suddenly awoke one morning, in 1815, to the fact that the last dollar of his money was gone. His sweet dream of an artist's paradise vanished forever. Disappointed and chagrined, he withdrew from the competition, and left the Babylon of Britain for America. His picture was highly praised by connoisseurs, and West afterwards expressed the opinion that it would have won the prize. It was obvious that the man who made the telegraph ought to have been competent to portray the passions of his great rival, the god who directed the lightnings of the Ægean.

Morse now took up his residence in Boston, within sight of the old homestead, and announced that he was willing to paint portraits for cash. He was ready, as he expressed it, to "coin brains into bread." His ambition was seriously crippled by the extreme reluctance of the people to come forward and get their portraits. His brother Sidney was in Boston, also editing the *Recorder*, the first or second distinctively religious newspaper in the country.

Discouraged and shocked by the low artistic taste which prevailed in the city, the portrait-painter plunged into the woods of New Hampshire, and there sought refuge from the selfishness of the cold world. He offered to paint portraits for ten dollars each; but the frontier farmers, engaged in clearing up their land, and eliminating superfluous wildcats and woodchucks from the agricultural problem, could not generally afford even to have their houses painted, and after enduring a year of their kindly but unprofitable hospitality, the artist started for Charleston, South Carolina, with whose glories Allston had made him familiar. At this date the Muses were, undeniably, more at home in the Southern metropolis than in the yankee

capital; and it is somewhat curious that while Morse stayed in Charleston, the home of Allston, and practiced portrait-painting for five or six years, Allston returned to America and settled down in Boston, the home of Morse. The artist found more portraits to paint in Charleston than among the pine hills of New Hampshire; but his experience during these years went far to confirm the objections which the Cambridge geographer had urged against reliance upon the fine arts as a means of support.

Among other ventures, he painted the interior of the House of Representatives of the United States—rather an ambitious subject. While in France he had succeeded admirably with an Interior of the Louvre, introducing copies of the famous pictures on the walls in miniature, and he thought that if he could give portraits of the most distinguished American Congressmen, in miniature, it would be a hit. It took him nearly two years to paint it, and when it was done, though the portraits were authentic and cleverly arranged, it attracted little attention, and the artist rolled up the huge canvas in disgust. His impecunious and cynical friend, the poet Percival, stormed at the public about it, and declared it was a disgrace that Morse had to pay $110 for the privilege of exhibiting the great work free in New York!

Morse now resolved to plunge into politics, and accepted the position of an *attache* of the American legation to Mexico. He abandoned the design, however, and in 1823, went to live in New York, attracted to the metropolis largely by the fact that his brother Sidney had gone there to start the New York *Observer*, the organ of the Presbyterians. Samuel Morse was thirty-two. He was somewhat in debt, but his artistic ability and fine social qualities were at once recognized, and he found appreciation and patronage. Lafayette revisited America in 1824, and, in the midst of the furor of his welcome, the corporation of New York commissioned Morse to paint a full-length portrait of him for the City Hall. The distinguished patriot sat to the artist, and the result was satisfactory. William Cullen Bryant, who knew Morse for fifty years, says of his character and habits as an artist: "His mind, as I remember, was strongly impelled to analyze the processes of his art—to give them a certain scientific precision—to reduce them to fixed rules, to refer effects to clearly defined causes, so as to put it in the power of the artist to produce them at pleasure and with certainty, instead of blindly groping for them, and, in the end, owing them to some happy accident, or some instinctive effort, of which he could give no account."

He was called away from the delightful task of finishing the portrait of Lafayette to attend the death-beds of his wife and father, and to watch over his sick children. In the beautiful cemetery at New Haven is a stone on which he caused to be inscribed: "In memory of Lucretia Pickering, wife of Samuel F. B. Morse, who died February 7, 1825, aged 25. Beautiful in form, features, and expression: bland in her

manners, highly cultivated in mind, dignified without haughtiness, amiable without tameness, firm without severity, cheerful without levity; in suffering the most keen the serenity of her mind never left her; though suddenly called from earth, eternity was no stranger to her thoughts, but a welcome theme of contemplation."

Morse was constitutionally an organizer. In 1825 he induced the artists of the city to meet together at his room, ostensibly to eat strawberries and cream, and the result was the organization of the National Academy of Design, which has since grown to such noble proportions, and has given to artists a far higher consideration in the country than was ever before accorded to them. Morse was elected its first president, and retained the position for sixteen years. He delivered in the New York Athenæum the first course of art lectures ever attempted in America.

Meantime he plodded away at the easel. Though he was an excellent practical chemist, and knew what the nitrate of silver was, and had read of the success of Humphrey Davy in producing a transient human profile on a screen, the artist-scientist never thought of the yet unborn Daguerreotype. But his friendship for Prof. J. F. Dana had become very intimate, and he attended, with keen appreciation, his lectures on electro-magnetism at the Athenæum. The first electro-magnet ever used in the United States belonged to Morse, and the spiral coil used by Dana suggested to the inventor the magnet now used in every Morse instrument in the world.

The experiments and developments in the realm of electricity now announced the speedy birth of the telegraph. Morse had kept up his interest in chemistry, and had eagerly followed the progress of the new and marvelous discoveries. During his whole life as an artist he had speculated frequently on the phenomena of electricity and electro-magnetism. With his friend, Dana, he had investigated these and cognate matters, and, like many of the scientific men of his age, they had discussed the practicability of conveying intelligible signs through long distances.

In 1829 Morse again went to Europe to finish his education in art, which had been so abruptly broken off fourteen years before. He went to profit by study, and hoping to acquire the facility and dexterity, the lack of which so much embarrassed him. He remained three years, and in October, 1832, he sailed from Havre for New York in the packet-ship Sully. In the cabin of that vessel was born the electric telegraph. In this place let us see what was known of electricity and telegraphing when Morse discovered his new world upon the Sully.

For conveying messages, the signal, for the sea, and the semaphore, for the land, were deemed sufficient. They were substantially the same method. The semaphores were a line of tall towers built on commanding elevations at a distance of five to ten miles, equipped with powerful telescopes, and an apparatus on the top consisting of

a mast with two arms, which turned in different directions for the different letters of the alphabet. This answered very well in clear weather, but it was expensive, and often an important dispatch would break off abruptly in the middle with the dismal words "Stopped by the fog." The semaphore was greatly superior to the telegraph of the Gauls, which consisted in shouting the news from one hill to another, and by the use of which Cæsar summoned his armies together in three days; and to the signal of the fiery cross, by which the Saxons announced the approach of the Normans; and it served so well in France, that there was much public remonstrance when, in 1848, it was superseded by the electric telegraph.

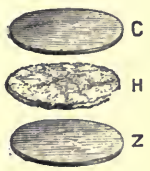
Franklin set alcohol on fire as early as 1748, almost half a century before Morse was born, by sending a charge of friction electricity under the Schuylkill river. Dr. Watson, in England, in 1747, sent shocks through two miles of wire suspended on posts, using the intervening earth to complete the circuit. Pre-arranged signals were communicated by the electric shock by Lesage, at Geneva, in 1774, and by Lomond, of France, in 1787, probably by causing the divergence of pith-balls. In 1794, when Morse was three years old, Reizen, of Germany, constructed an electric telegraph, using thirty-seven wires, and so arranging spaces upon tin-foil that when they were illuminated the indicated letter was exhibited. Similar telegraphs were constructed in Madrid in 1797–8, one of them extending twenty-six miles. Ronolds set up an eight-mile electric telegraph in England, in 1816, and in 1827 Harrison G. Dyar constructed a line of two miles on Long Island, using iron wire, glass insulators and wooden posts, and employing the chemical action of the electric current on litmus paper as his means of communicating. Ronolds asked the English Government to adopt his invention, and the tardy reply set forth that "telegraphs are of no use in time of peace, and during war the semaphore answers all required purposes!" This in the nineteenth century!

All these attempts were partial failures, for the reason that they all used machine or friction electricity, and all, with the exception of Dyar's New York contrivance, were merely signaling and not recording telegraphs.

The construction of the Voltaic pile, by Professor Alexander Volta, of Pavia, was indispensable as a preliminary condition to the invention of a successful electric telegraph; for before a satisfactory telegraph could be made possible, there must be assured a regular and constant flow of the fluid whenever summoned, like those electric currents produced by chemical action. It must be uniform and abundant under all circumstances; whereas the old methods by friction supplied only small quantities, and that irregularly. A century ago the crank of the electrical machine was turned mainly for amusement and the gratification of curiosity. But at a semi-scientific reunion at Bologna, while Galvani was making investigations on the nervous irritability of cold-

blooded animals, he discovered that the limbs of a dead frog contracted violently on each recurrence of the spark. He afterwards obtained the same results by bringing the copper hook, on which the nerve hung, and the limb itself simultaneously in contact with an iron railing. The experiment was repeated all over Europe with great delight and amazement. Galvani insisted that the electricity arose in the limb itself. Volta proclaimed the opposite theory, that the electric force originated in the contact of the heterogeneous metals. The contest was vigorous, but it is now known that both were wrong, and the chemical theory is generally accepted, attributing the source of galvanic electricity to the chemical action of a liquid on a metal coupled with another metal less easily acted on than itself.

In 1799, Volta by accident discovered the extraordinary action of certain liquids on metals, and immediately conceived and constructed the Voltaic pile. He took a series of two discs, one of copper (*c*), and one of zinc (*z*), soldered together. He separated each compound plate with a circular piece of woolen cloth (*h*), moistened with a solution of common salt or diluted sulphuric acid, and placed these above each other in a *pile*. The electricity which he drew from the pile was sufficient to produce shocks and even sparks. These effects were obtained continuously, and the pile needed no recharging. This was an immense advance in the study of electrical phenomena. Thenceforward progress was rapid.



Sommering began experimenting for a Voltaic-battery telegraph in 1809. He used thirty-five wires, each terminating in a gold point, and all the points were set up vertically on a horizontal line at the bottom of a reservoir of water. An electric current caused bubbles of gas to rise to the surface over the points affected, and thus the letters were indicated. But the incomplete batteries then in use were unequal to a long circuit or prolonged action. They were soon exhausted, and practical telegraphing had to wait the discovery of electro-magnetism.

This important branch of the science was developed during the next twenty years, by Œrsted, of Copenhagen; Schweigger, of Halle, and Ampere, of Paris. William Sturgeon, of London, and Becquerl, Kemp, and Olm, of Germany; but to Professor Joseph Henry, then Professor of Mathematics at Albany, afterwards at Princeton College, New Jersey, is pre-eminently due the honor of having explored the laws of nature in advance of all others, and for being the "first to wrest electro-magnetism from Nature's embrace and make it a missionary in the cause of human progress" after making over "four thousand experiments."* By his important discoveries the battery was strength-

* See an article from Prof. Henry stating some results, in vol. xix of Silliman's American Journal of Science, published in 1831, pp. 400, etc.

ened inconceivably; adapting the telegraph to the longest distances. He strengthened the magnet by increasing the number of coils of wire on the arms, and first demonstrated the practicability of sending intelligence between the most distant points. [In 1835, Henry being in London, showed Wheatstone his method of producing these mechanical effects by exciting magnetism at a distance, and the English savan profitably added this to the intelligence brought by Cooke from Germany.] The distinguished English electrician, Faraday, in the winter of 1831–2, published his discoveries of the induction of electric currents, and of the evolution of electricity from magnets which soon after enriched the world with the induction coil, invented by Prof. Charles G. Page, of Salem, Mass.

Thus it is plain that the science of electro-magnetism was far advanced when Morse entered the lists to compete for the great prize. By the year 1832 there was much earnest talk, in all scientific circles, about the wonderful phenomena of electricity and what was likely to result. So it was quite natural that on the packet Sully, the next day after the artist-chemist took passage for home, conversation turned to the discovery of Œrsted, establishing the correlation of electricity and magnetism. A gentleman described some experiments he had just witnessed in Paris, in which a magnet gave forth sparks.

"How long does it take the fluid to pass through one hundred feet of wire?" asked a passenger.

"It passes instantaneously," replied Morse, quoting Franklin's experiment on a wire four miles long.

"And if that is so," he added, by way of comment, "and if the presence of electricity could be made to manifest itself in any desired part of the circuit, I see no reason why intelligence might not be transmitted instantaneously by electricity."

"How convenient it would be to send news from Boston to Washington!" exclaimed the other incredulously.

"I see no reason why we may not," confidently rejoined Morse.

From that moment he never relinquished his hold of the idea. It occupied all his thoughts. It seemed to him a settled fact that, in a gentle and steady current of the electric fluid there was a source of regular and rapid flight, which might be applied to a machine for conveying messages from place to place, and inscribing them on a tablet at their point of destination. He procured pen and paper, and shut himself into his state-room. It remained now to devise merely the necessary apparatus, and before the Sully dropped anchor in New York Harbor, Morse had invented and put on paper, in drawings and explanatory words, foreshadowings of the apparatus employed to this hour by most of the telegraph lines in the world. The alphabetic system used on his first machine, the narrow sheets of paper upon a revolving block, and a mode of burying wires in the earth were all thought of, and recorded on board that packet-ship. We can fancy the inventor, full of this thought, as he paced the deck of the Sully, or lay in his

berth, revolving in his mind the mechanical contrivances by which this was to be effected, until the whole process had become definitely outlined in his imagination, and he saw before him all the countries of the civilized world intersected with lines of his electric wire, bearing messages to and fro with the speed of light.

Except the idea of suspending the wires on posts, all the essential features of the invention were thought out before the vessel entered the harbor. A few days after landing it occurred to him that a suspension of the insulated wires on poles might be preferable, though he still believed the burying process the best. But science had done her part in advance by making the earth a conductor. It remained for the inventor to devise an apparatus which should utilize the scientific discoveries already made, which Professor Morse in due time accomplished, but not without many months of labor.

Of course the telegraph was the aggregate result of the genius and patient toil of many men, and it is agreed by almost universal consent, even in Europe, that the world is far more indebted to Morse's system than to any other; but this, as the sequel will show, is not the product of Professor Morse alone.

His first idea was to pass a strip of chemically prepared paper in contact with the wire, decomposing the chemicals so as to form marks of different lengths, which should form a sign alphabet. Next he adopted, after much patient work in experimenting, a rude apparatus, which he made, in 1835, with his own hands, using a half mile of wire strung around the room, but this only transmitted in one direction. In a work on telegraphs by Alfred Vail, published in 1845, will be found an article copied from the New York *Journal of Commerce*, of September 5th or 6th, 1837, written and signed by Professor Morse, in which he speaks of this first machine, and says: "The register makes but one kind of marks, to wit, V—this can be varied two ways, by intervals, thus: V V V V, signifying one, two, three, etc., and by reversing thus: Λ." These marks were produced by a pendulum motion, which was wholly different from any thing in the later invention, the latter being the first used in practical telegraphing. He exhibited his original machine to his friends and the fame of it went abroad. It was not until the winter of 1837–8, however, that an improved apparatus was completed and exhibited at the New York University. There had now been provided two instruments, one for each end of the wire, enabling him to send dispatches and receive answers.

We have seen that Prof. Morse returned from Europe on the Sully in 1832, and that by 1835 he had, with his own hands, constructed the rude instrument already referred to. This was shown to his friends at his rooms in the New York University. Over thirty years afterwards, at the Delmonico banquet, on the evening of December 29, 1868—a magnificent entertainment was given by the solid and wealthy men of the city of New York as a compliment to Prof. Morse—

Chief Justice Chase, of the United States Supreme Court, presiding, Prof. Morse, in referring to these first efforts remarked: "In 1835, according to the concurrent testimony of many witnesses, it lisped its first accents and automatically recorded them, a few blocks only distant from the spot from which I now address you. It was a feeble child indeed, ungainly in its dress, stammering in its speech; but it had then all the distinctive features and characteristics of its present manhood. It found a friend—an efficient friend—in Mr. Alfred Vail, of New Jersey, who, with his father and brother, furnished the means to give the child a decent dress preparatory to its visit to the seat of Government. These few facts suffice here to indicate the birth of the telegraph," etc.

It is true that Alfred Vail was "an efficient friend," and that through him, his wealthy father, Stephen Vail, and his brother, George Vail, were induced to advance considerable sums of money in aid of the venture. But it would have been more magnanimous if in those last days of the aged savan he had stated the precise facts, and given Alfred Vail the full credit to which he was justly entitled. He would thus have generously raised a fitting monument to the memory of one who had years before "been gathered to his fathers" in the prime of manhood, who had with wondrous modesty and singular reticence refrained from claiming as of his own invention the improved Morse instrument and alphabet, simply because he had, while a student under Prof. Morse, at New York University, become interested as a friend in the experiments which Morse was pursuing, and at an early date had entered into a contract whereby he agreed "to devote his personal services and skill in constructing and bringing to perfection the mechanical parts of said invention, until the same shall be made the property of the United States, or otherwise be disposed of by said proprietors, and without charge for such personal services to the other proprietors, and for their common benefit; said service to be in accordance with the general direction and supervision of said Morse." By virtue of this Mr. Vail became an owner of one-eighth the patent, at the same period that Prof. Gale, also of the University, became, for his scientific contributions and skill, an owner of one-sixteenth of the patent.

Prof. Gale, in the case of Smith *vs.* Downing, presented diagrams of the veritable Morse Machine of '36, as it passed September '37 into Mr. Vail's hands for an entire mechanical reconstruction throughout, to speak a language not wholly unknown to the first machine, but to perform entirely new functions, and to produce an entirely new system of signs and letters, which the first by its structure, was physically incapable of being made to speak. Alfred Vail first produced in the new instrument the first available *Morse* machine. He invented the first "combination of the horizontal lever motion to actuate a pen or pencil, or style," and the entirely new telegraphic alphabet of dots, spaces, and marks which it necessitated, not long before

September, 1837, the month that the old instrument passed into his hands for reconstruction. His more perfect invention of a steel style upon a lever which could strike into the paper as it was drawn onward over a ground roller, and *emboss* upon it the same alphabetic characters, was not invented until 1844, about the time the first line of telegraph began to operate between Baltimore and Washington. This instrument, somewhat transformed, still holds its place (1872) as practically the best ever invented, and after standing all imaginable tests is not likely to be jostled from its firm pedestal of fame in the "MORSE system."

Prof. Morse never claimed to be the unaided inventor of the magnetic telegraph. Indeed, in his sworn testimony before the Court in Philadelphia, in the case of French *et al, vs.* Rogers *et al,* in reply to numerous questions of defendant's counsel, he *disclaimed* being "the inventor of the electro-magnet;" "the discoverer that the electro-magnet will attract an armature of steel or iron;" or "the first inventor of the combination of an electro-magnet with a circuit of conductors." He disclaimed having been "the first to discover that the breaking and closing of an electric or galvanic circuit, having within it a generator of electricity or galvanism, would cause an alternate flow and cessation of a current of electricity or galvanism." He disclaimed being "the first to discover that when an electro-magnet is connected with and forms part of such circuit, the magnet will be made attractive and non-attractive as the current flows or ceases to flow."

He *disclaimed* being "the first inventor of an apparatus consisting of a galvanic battery, or other generator of electricity or galvanism, a metallic circuit of electric or galvanic conductors, an electro-magnet with an armature and a device for closing or breaking such circuit, or that he was the inventor of the combination generally, or of any of its parts in the abstract, but he did claim that he was "the first inventor of the combination of those parts, as described in my patent and used in my telegraph."* In the case of Smith *vs.* Downing, in Boston, and of Morse *vs.* O'Reilly, at Louisville, Prof. Morse just as emphatically *disclaimed* the invention of the various *parts* of the telegraph, and claimed only *the first combination* of those parts (admitted to have been invented by others) for a particular purpose, and upon this ground only were his patents maintained.

The people of the United States are under lasting obligations to Mr. Henry O'Reilly for years of pioneer labor in constructing and organizing about 8,000 miles of their great lines of telegraph. Prof. Gale, in the case of Morse *vs.* O'Reilly, testified that when he first saw Morse's apparatus, in 1836, it was quite feeble and inefficient, but that it became powerful when Morse, at his suggestion, greatly increased the power of the battery and multiplied by ten the turns

* This patent was issued, of course, after Vail became his associate.

of wire on the arms of the magnet; and Prof. Gale acknowledges that he learned this from Henry's experiments. There can be no doubt that Steinheil, in Germany, Wheatstone, Cooke and Bain, in England, and Morse, House, and O'Reilly, in America, were all disciples of Prof. Joseph Henry, now President of the "Smithsonian Institute," Washington City.

Professor Henry's experiments with the Electro-magnet aided Professors Gale and Morse in their investigations, while Mr. Vail's thorough work in perfecting the new alphabet and machine gave to the world the best practical telegraph yet known. Morse's original instrument could not have successfully performed the labor required.

There seems to be little doubt that Dr. Barlow, the English scientist, invented a telegraph in 1825, which was mechanically nearly the same as that afterwards devised by Morse upon the Sully. But he failed for the same reason that Morse's first efforts failed, because the method of sending the fluid through long lines was not known to the inventor. Indeed it had not been discovered in 1825. Neither knew how to propel the galvanic current *to* a distance, and neither knew how to generate the needful magnetic forces *at* a distance. Each failed to construct a practical electro-magnetic telegraph that could be worked. Prof. Morse could not send more than from "fifteen to forty feet" from the operator—as stated in 1856, by Prof. Gale, who on the day upon which that conversation occurred, in the winter of 1836 suggested modifications to him, that resulted in sending the current of electricity through as many hundred feet of wire.

In a letter dated March 3d, 1872, Prof. Gale said: "Was Morse's invention the achievement of a *machine*, or was it the discovery of *a law* or *principle* of science? The plain answer is, that the Morse invention is a machine, and nothing more, nor has it been claimed by any body else. [Is it not a pity that Alfred Vail was so modest, and cared so much more for others than others have since cared for him?] Henry's achievement in this relation is the discovery of a scientific law or principle, which is, that a certain arrangement of electric conductors increases electric force to send electric currents through long distances adaptable to telegraphic purposes. Now, as Professor Henry did not invent a telegraphic machine, and Morse did not discover a law or principle in electricity, there can be no conflict between those two honorable gentlemen." In the same letter Prof. Gale said further: "When I first saw the machine (in 1836) the steed was already harnessed, and only needed breaking in;" but he omitted facts which should have been given, describing the old Morse machine, and respecting the origin of what is now known as the *Morse* instrument, stating rather carelessly, we think, that "Morse invented the form of the various parts of his machine," and so failed to furnish the public correct information. This was, to say the least, disingenuous, and really very much more than had been said by Prof. Morse at the Delmonico banquet, and again at the Academy of Music on the even-

ing of the day on which his statue was unveiled at Central Park. So much for the truth of history.*

We now come again to our narrative of Prof. Morse's early movements in connection with his invention. They were days, months, and years of tribulation, sore disappointment and trial. During this same year, 1838, Steinheil in Bavaria, and Wheatstone in England, had separately announced the invention of a telegraph by themselves, and their governments properly lent them assistance in perfecting their apparatus. William Cullen Bryant, speaking of this period, says: "Morse remarked to me, with some despondency, 'Wheatstone and Steinheil, who have electric telegraphs, are furnished the means of bringing forward their methods, while to my invention, of earlier date than theirs, my country seems to show no favor.'" It is obvious that this republic never appeared to less advantage in the eyes of history than during the period when Morse struggled with ignorance, skepticism, and derision for the privilege of making his native land renowned.

Surprised by the announcements of the British and German telegraphs, and fearing that he was to lose the prize for which he was struggling, by what he felt sure was a later device, he promptly went to England, and met Wheatstone upon his own ground. He found that Wheatstone's telegraph was far inferior to his own, and that its birth was at least four years later; and he at once applied for a patent. He proved by numerous witnesses the priority of his invention, and then demonstrated that it was superior and altogether different; but he was refused a patent on the ground that a description of the invention had been previously published in England,—the article from the *Journal of Commerce*, copied by a London scientific magazine detailing some of the results of Morse's experiments and discoveries. In France he received a useless *brevet d'invention;* in other countries—nothing. He returned home in the fall, and, somewhat depressed by his failures, applied again to Congress.

The next four years were years of hope and despair, of appeal, ridicule, and fruitless struggle. He laid aside his brush entirely, and gave his whole soul to the telegraph. Session after session he persevered, and year after year he met with rebuff and defeat. His bill

* We have been led into an investigation of the facts connected with this case because a friend of ours was present while Prof. Morse and Alfred Vail were experimenting at Speedwell, near Morristown, N. J., early in the autumn of 1837, and were using a mile or more of bonnet wire, wound round a reel, and registering with the machine, described as having a pendulum motion, and making the V shaped character, named in the early letter of Prof. Morse to the *N. Y. Journal of Commerce*, from which we have previously given an extract. There is indisputable evidence as to the entire truth of all that has been asserted respecting the paternity of what must be known hereafter, as heretofore, as the *Morse* Machine. It was invented by Alfred Vail, and made at his father's Foundry and Machine Shops, at Speedwell, Morris County, New Jersey. For illustrations and explanatory matter descriptive of these admirable instruments, see pp. 251–254 inclusive.

was amended by Congressional wits to include a line to the moon, and to pay for experiments in witchcraft, mesmerism, and *Millerism*, the Speaker refusing to rule out the absurd amendment, on the plea that, "it would require a scientific analysis to determine how far the magnetism of mesmerism was analogous to that employed in telegraphing."

At last came the close of the session of 1842–3. On the evening of March 3, the Professor once more gave up in despair, and under the fire of the quips and jokes that greeted his bill left the Capitol and returned, despairing, to his hotel, resolved to return to portrait-painting for funds to develop his invention. But his friends stood by him—Ferris, Kennedy, Winthrop, McClay, and Wood—and, in the last hour of the expiring session, by a vote of 89 to 83, the bill passed, appropriating $30,000 for Morse's first line to Baltimore.

We are indebted to *Harper's Monthly* for the following anecdote:

"Morse made his preparations to return to New York next day, and retiring to rest, sank into a profound slumber, from which he did not awake until a late hour on the following morning. But a short time after, while seated at the breakfast-table, the servant announced that a lady desired to see him. Upon entering the parlor he encountered Miss Annie Ellsworth, the daughter of the Commissioner of Patents, whose face was all aglow with pleasure.

"I have come to congratulate you," she remarked, as he entered the room, and approached to shake hands with her.

"To congratulate me!" replied Mr. Morse, "and for what?"

"Why, upon the passage of your bill, to be sure," she replied.

"You must surely be mistaken; for I left at a late hour, and its fate seemed inevitable."

"Indeed, I am not mistaken," she rejoined; "father remained until the close of the session, and your bill was the very last that was acted on, and I begged permission to convey to you the news. I am so happy that I am the first to tell you."

The feelings of Mr. Morse may be better imagined than described. He grasped his young companion warmly by the hand and thanked her over and over again for the joyful intelligence. "As a reward," concluded he, "for being the first bearer of the news, you shall send over the telegraph the first message it conveys."

"I will hold you to that promise," replied she. "Remember."

"Remember," responded Mr. Morse; and they parted.

By the month of May, 1844, the whole line was laid, and magnets and recording instruments were attached to the ends of the wires at Mount Clare Depot, Baltimore, and at the Supreme Court Chamber, in the Capitol at Washington. When the circuit was complete, and the signal at the one end of the line was responded to by the operator at the other, Mr. Morse sent a messenger to Miss Ellsworth to inform her that the telegraph awaited her message. She speedily responded to this, and sent for transmission the following, which was the first

formal dispatch ever sent through a telegraphic wire connecting remote places with each other:

"WHAT HATH GOD WROUGHT!".

The original of the message is now in the archives of the Historical Society at Hartford, Connecticut.

The first important information conveyed through the Telegraph was the announcement of the nomination of James K. Polk, for the presidency, by the Baltimore Democratic Convention, May 27th, 1844. The news, published in the evening paper, was received with the greatest incredulity, which was rendered almost universal, even among the friends of the enterprise, by the fact that the nomination was a most improbable one. Morse's fortune was made when the morning train on the new railroad, almost as great a wonder, brought the confirmation.

In 1846, when there were less than a thousand miles of telegraph wire on the continent, Morse wrote: "When all that transpires of public interest at New Orleans, St. Louis, Albany, New York, Charleston, Boston, and Washington shall be simultaneously known in each and all these places together; when all the agents of the Government are in instantaneous communication with head-quarters; when the several departments can at once know the actual existing condition of their remotest agencies, and transmit at any moment the necessary orders to meet an exigency, then will some estimate be formed of the powers and advantages of the Magnetic Telegraph."

Thenceforward the Morse telegraph went rapidly forward to take possession of the earth, first spreading over America and then wresting continental Europe from every rival. The reader of this sketch will have seen already that Morse was not the first inventor of a telegraph, for rude telegraphing was practiced centuries before he was born. He was not even the inventor of the *electric* telegraph, for Sommering had constructed and operated one while Morse was in college. All that Morse's friends claim — and it is enough — is that he was the inventor of the *first practical electro-magnetic recording telegraph.*

Wheatstone's was greatly inferior, requiring a number of wires and delivering slowly. That of Prof. A. C. Steinheil, of Munich, was much better than Wheatstone's, being constructed upon the same principle as that of Morse, but rather more complicated, and more liable to get out of repair. Steinheil showed himself a true child of science by conceding the superiority of Morse's system, and at a convention in Germany, in 1851, for the adoption of a uniform system, he magnanimously recommended that of Morse as being the simplest and best in the world, and by his advice it was adopted throughout Germany. This generous conduct contrasts strikingly with that of Wheatstone, especially when it is remembered that the latter borrowed his invention from a young Englishman named William F. Cooke, who, in 1836, brought to England a system of

telegraphing by the deflection of the needle, which had occurred to him while a student in Heidelberg.

The superiority of Morse's system is sufficiently attested by the fact that it has been universally adopted by the whole world except Great Britain. There are but a few miles of any other telegraph on the entire continents of America, Europe, and Asia. It possesses Russia, Italy, France, Germany, Austria, and Spain; Egypt and Africa; Turkey and Greece; India, Australia, China and Japan. Every other system vanishes from the competition. Honors were showered upon Morse by every European nation. No member of the English-speaking race ever received so many tokens of royal approval, and so many marks of distinction. Yale was first to recognize her son; she conferred the degree of LL.D. in 1848. During the same year the Sultan of Turkey decorated him with the *Nishan Iftichar* (the order of glory), set in diamonds. The kings of Prussia and of Wurtemberg, and the Emperor of Austria awarded to him gold medals for his achievements in science. In 1856 Napoleon presented to him the cross of chevalier of the Legion of Honor; while, in 1857, he received from the King of Denmark the cross of Knight of the Dannebrog, and in 1858, from the Queen of Spain, the cross of Knight-commander of the order of Isabella, the Catholic. In 1857 he received his most substantial honor from various European nations, whose representatives met, at the invitation of Napoleon, in Paris to devise means for giving the great inventor a collective testimonial. In that conference were the embassadors of France, Russia, Sweden, Belgium, Austria, Sardinia, Tuscany, Rome, and Turkey, and they closed by forwarding to their benefactor a vote of thanks and a purse of 400,000 francs ($75,000). But Morse was now in little need of money; the telegraph had already begun to make him rich.

During the twenty years following 1850, he was the recipient of frequent testimonials and ovations. In 1856 the telegraph companies of Great Britain united to give him a banquet in London, at which Cooke, the inventor of Wheatstone's telegraph, presided. Two years later a similar banquet was given him in Paris.

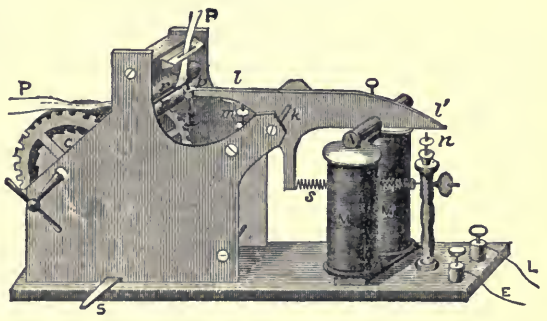
Submarine telegraphy also originated with Prof. Morse, who, in company with Samuel Colt, laid the first cable, in 1842, across New York Harbor—winning the gold medal of the American Institute.

Mr. Frederick N. Gisborne and Cyrus W. Field finally organized the sentiment which carried the Atlantic Cable to completion; but as early as August 10, 1843, six months before the first telegraph line was put up, Morse wrote to John C. Spencer, then Secretary of the Treasury, detailing the results of his submarine experiments in New York Harbor, to show the power of electricity to communicate at great distances, and adding at the close, in words which were the prophecy of Science, "*The practical inference from this law is, that telegraphic communication on the electro-magnetic plan may, with cer-*

tainty, be established across the Atlantic Ocean. Startling as this may now seem, I am confident the time will come when this project will be realized!" This was about eleven years before the great scheme enlisted the skill and energies of Cyrus W. Field.

Morse's Recording Instrument, or, as it is shortly called, the 'Morse' or 'Register,' is shown in fig. 1. L is the line-wire, and E the earth-wire, conveying the current from the distant station. The current thus sent traverses the coils of the electro-magnet, MM′, the armature, A, of which is in consequence drawn down. A is attached to the lever *ll′*, moving round the axes *k*. By the attraction of A, the end *l′* is lowered, and brought against the stud *n*. The armature must not touch the soft iron of the electro-magnet on being drawn down, for if it did, it would stick, and would not be instantly released when the current ceases. When the end *l′* is lowered, the end *l* is raised; *ll′*, at its inner end, carries a steel point or style, *p*, which by the upward motion is brought against a strip of paper, PP′, carried towards P′ by the rollers *rr′* set in motion by clock-work, C, quite independently of electricity. The clock-work is liberated or stopped by the switch S. The paper is supplied from a large roll or bobbin, above the instrument, which turns round as the rollers demand. So long as the style is elevated the paper strip is made by the clock-work to rub against it. A line is thus embossed on its upper surface. To facilitate the doing of this there is a groove in the upper roller, opposite the style. When the current from the distant station ceases, the lever *ll′* is pulled back to its original position by the spring *s*, and the style falls away from the paper. To prevent it falling too far, another stud, *m*, lies on the other side of the axis. When the circuit is again closed, the style once more marks the paper, and thus the lever keeps oscillating under the opposing actions of the magnetism developed by the transmitted current, and the elasticity of the spring, *s*. The time that the style remains elevated, determines the kind of mark on the paper. If it is nearly momentary, a dot is imprinted; for a longer time, a dash. We have thus the combinations of an alphabet in the combination of dots and dashes. Thus, A is a dot and a dash (. —); B, a dash and three dots (— . . .), etc. The alphabet is so arranged that the letters occurring most frequently

FIG. 1.

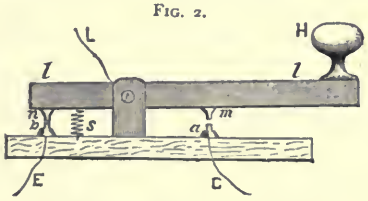


are more easily signaled; thus, E is one dot; T, one dash. An expert telegrapher can transmit from thirty to forty words a minute by this instrument on a land-line of between 200 and 300 miles. Several modifications of Morse's telegraph have been made, the chief one being the substitution of ink-marking for embossing. The beautiful instruments of Siemens and Halske are of this kind.

A clerk that has been well accustomed to Morse's telegraph, in transcribing, seldom looks to the paper. The mere clicking of the lever becomes a language perfectly intelligible to him. He need therefore only to look to the record when he may have heard indistinctly. Sir Charles Bright does away with the recording instrument altogether, and substitutes two bells, one muffled, the other clear, sounded by a hammer oscillating between them. The bells speak a telegraphic language as quick as the clerk can write. It is stated in favor of Bright's system (which is used by the Magnetic Company in Britain) that the signals are all as it were dots in Morse's instrument, and so take less time than dots and dashes. Recording instruments are generally considered preferable to instruments which merely signal, as they fix any fault of transmission or copying on the party at fault. Acoustic signaling, again, is preferable to ocular signaling, a person can hear and write much more easily than see and write.

Transmitting Key.—Let us now transfer our attention to the distant station, to see how the current is transmitted from it. This is done by the transmitting key, shown in fig. 2. A brass lever, *ll*, moves round the axis A. On opposite sides of the axis, two nipples of platinum, *m*, *n*, are soldered to its lower sides. The nipple *m* is called the hammer. Below *n* is the stop anvil, *b*, tipped with platinum, which is in connection with the earth-wire E. Below the hammer, *m*, lies the anvil *a*, the nipple of which is likewise of platinum; *a* is connected by the wire C with one of the poles of the sending battery, generally the copper pole. When the lever is left to itself, *n* and *b* are in contact under the force of the spring *s*. When the hand presses on the ebonite (insulating) handle H, contact is broken at *n* and *b*, and established at *m* and *a*. Three wires are in connection with the key, E and C just named, and L, the line-wire from the distant station connected with the axis pillar, and therefore with the lever. When the key is in the receiving position, that shown in the figure, the current from the sending station takes the route L, A, *l*, *n*, *b*, E, the Morse, and then to earth. When H is pressed down, the key is in the sending position, and transmits the battery current by C, *a*, *m*, A, L, to the distant station. The play of the anvil and hammer need not be more than one-tenth of an inch. This is more

Fig. 2.

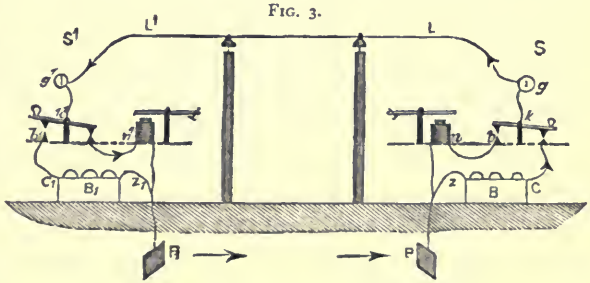


than sufficient for completely breaking the current, and it allows of speedy manipulation.

The Battery.—The batteries employed are in Britain almost universally Daniell's. Constancy and certainty of action is what is most wanted in the battery, and this Daniell's battery yields. In Germany, Bunsen's battery is also used, charged with diluted sulphuric acid, the carbon being immersed in a mixture of 1 of acid to 10 of water, and the zinc in a mixture of 1 to 20. When batteries have to be moved about much, sand is put in to keep the liquid from spilling. The number of cells employed varies with the distance, the insultation of the line, and the delicacy of the instruments. The register, as afterwards mentioned, is seldom worked directly by the transmitted current, but by relay. To work a relay with good insulation, 60 Daniell's cells will suffice for a distance of 300 miles. For less distances, less of course will suffice. For short circuits, where the resistance is small and current strong, small cells soon exhaust themselves; large cells therefore must be used to maintain the supply. Magneto-electricity is also employed as a source of the current. This answers well on short circuits, or for private telegraphs, but experience has proved that the galvanic battery is by far the most advantageous source of electricity for extensive telegraphic work.

How Two Stations are connected together.—The manner in which two stations are 'joined up' on Morse's system is shown in fig. 3. B and B_1 are the batteries at the stations S, S_1; *k*, *k'* are the transmitting keys; *n*, *n'*, the registers; *g*, *g'*, the galvanometers; LL, the line-wire insulated on posts; P, P_1, the earth-plates.

FIG. 3.



When the key *k*, at the station S, which is here represented as the sending station, is depressed, the current from the battery B takes the following course. From the copper pole C, of the battery B, it goes to the anvil of *k*, passes through *k* to the galvanometer *g*, which having traversed, it goes into the line LL to the receiving station S_1, traverses the galvanometer, the key *k'*, the coils of the register *n'*; thence it goes 'to earth' at the plate P_2, returns by the ground to P at the sending station, and thus finally reaches the zinc pole Z of the battery B. At the station S, *b* and *n* are out of circuit; and at S_1, *b'* and battery B_1 are out of circuit; *n* is thrown out of circuit, because its coil offers a resistance equal to several miles of the line-

wire, and it is requisite to keep down the resistance to the minimum. If it were in circuit, both registers could print simultaneously, but that is not necessary, one record at the receiving station being enough. The sender would thus have no idea as to whether his message had told or not, did not the motions of the needle of the galvanometer, *g*, reveal the currents put in circuit. The galvanometer also shows the presence of earth-currents on the line. If *k* were left to itself, and *k'* depressed, the station S_1 would then be the sending, and S the receiving station, and the connections would be exactly as shown in the figure, only at opposite stations.

Suppose the clerk at S wishes to telegraph to S_1, he depresses the key *k* several times, so as to send a series of dots and dashes giving the name of the station. The attention of S_1 is first arrested by the clicking of the armature of the Morse. He thereupon turns the switch S (fig. 1), and sets the clock-work in motion, and sends back to S that he is ready, and the printing thereupon begins. When both keys are depressed, the whole circuit is broken, so that when both sender and receiver have their hands on their respective keys, no message can be sent. One might fancy that confusion would arise from cross messages, but clerks soon get over this inconvenience, and communicate back and forward with perfect facility. There is a code of working signals to indicate the kind of message, 'repeat,' 'understand,' etc., besides numerous recognized contractions. To arrest the attention of attendants, the current is sometimes made to ring an alarm bell.

The Morse telegraph is noted for its surpassing simplicity. The signs for the letters of the English alphabet (which are variously modified to adapt them to other alphabets), and for the numerals and punctuation marks, are as follows, the most used being the simplest:

LETTERS.

A · —	G — — ·	M — —	S · · ·	Y — · — —
B — · · ·	H · · · ·	N — ·	T —	Z — — · ·
C — · — ·	I · ·	O — —	U · · —	& · — · · ·
D — · ·	J · — — —	P · — — — ·	V · · · —	
E ·	K — · —	Q — — · —	W · — —	
F · · — ·	L · — · ·	R · — ·	X — · · —	

NUMERALS.

1 · — — — —	3 · · · — —	5 · · · · ·	7 — — · · ·	9 — — — ·
2 · · — — ·	4 · · · · —	6 — · · · ·	8 — — — · ·	0 — — —

PUNCTUATION.

Period	· — · — · —	Exclamation	— — — · —
Comma	— — · · — —	Quotation	· — · · — · — · —
Interrogation	— · · — — ·	Parenthesis	— · — — · —

The income derived from the telegraph began soon after 1846, to place Morse in affluence. He now enjoyed a life of such prosperity

as is rarely allotted to man. His dreams had all come true—except the dream of becoming a great painter, for his studies in art had been abruptly broken off before he had attained that excellence for which he strove. But he lived to enjoy for his gigantic achievement in telegraphy that complete and unbounded fame which usually comes only to posthumous blossoming. Wealth dropped suddenly into his hand. He received all the honors generally accorded to dead heroes only. He lived to see with his own eyes the culmination of his triumphs, and to hear with his own ears the world's spontaneous acclaim.

After a life of immense activity which knew almost all that earth can teach of trial and adversity, of derision and poverty, of defeat and victory, Mr. Morse, at the age of seventy, retired from the business perplexities of life, and devoted himself to the gratification of the tastes of a private gentleman, and the exercise of a generous hospitality. In the winter he lived at his city residence in New York, which was as beautiful as a refined taste and an ample fortune could make it.

His country residence, situated in a most picturesque spot, amidst deep ravines and lofty forest trees, on the banks of the Hudson, two miles south of Poughkeepsie, is built in the style of an Italian villa, and is topped with a high tower, and encircled with extensive piazzas, clustering with vines and flowers. The master of this mansion had long since taken to himself a second wife, and was surrounded by a family of children. In this delightful spot, adorned with all the chasteness of an artist's taste, in the midst of a charming and affectionate family, and a large circle of admiring friends, the evening of his life was passed in undisturbed tranquillity. Occasionally the little world of "Locust Grove" was flattered by the announcement of the completion of some new telegraphic enterprise; but it soon subsided into its customary channel, and moved along as quietly as the dreaming river that flowed languidly at its feet.

On June 10th, 1871, when Professor Morse had just passed his eightieth birthday, a bronze statue of heroic size, in his honor (by B. M. Pickett), was unveiled in Central Park, New York, on an eminence a little south of the Casino. Its inauguration was made the occasion of a joyful assembling of telegraphers from all parts of the United States.

A week before the day fixed for the ceremonies there had been more applications for seats to the evening reception than the Academy of Music would hold. We quote from the *Journal of the Telegraph:*

"As early as June 7th familiar faces from distant cities began to show themselves, and many an old familiar name was again named, as we grasped hands that once toiled with us in our early labors. By Saturday morning, June 10th, there were recorded delegates from Pennsylvania, Mississippi, District of Columbia, Maryland, Connecticut, Canada, Louisiana, Massachussetts, Georgia, Ohio, Tennessee,

Illinois, New Jersey, Iowa, North Carolina, Michigan, Kentucky, California, Nebraska, Indiana, Vermont, Maine, Rhode Island, West Virginia, Virginia, Nova Scotia, and Minnesota. We speak the simple truth, which is yet upon every lip, that never was there assembled in any city, for any purpose, a finer looking or more intelligent class of men. In this we glory. As we gazed on the vast assemblage convened on the evening of the eventful day in the Academy of Music, we felt that the telegraph interests of America were in the hands of true and noble men.

By four o'clock in the afternoon at least ten thousand invited guests had gathered around the pedestal which supported the veiled statue. Governor Hoffman, of New York, welcomed the telegraphers of the Continent in fitting language, after which Governor Claflin, of Massachussetts, the native state of Morse, threw aside the drapery and displayed the statue to the vast assemblage. A tumultuous outburst of applause followed, the band playing the "Star Spangled Banner."

William Cullen Bryant, the venerable poet and the life-long friend of Morse, then paid his tribute to the inventor in a brief address, of which we quote a single paragraph:

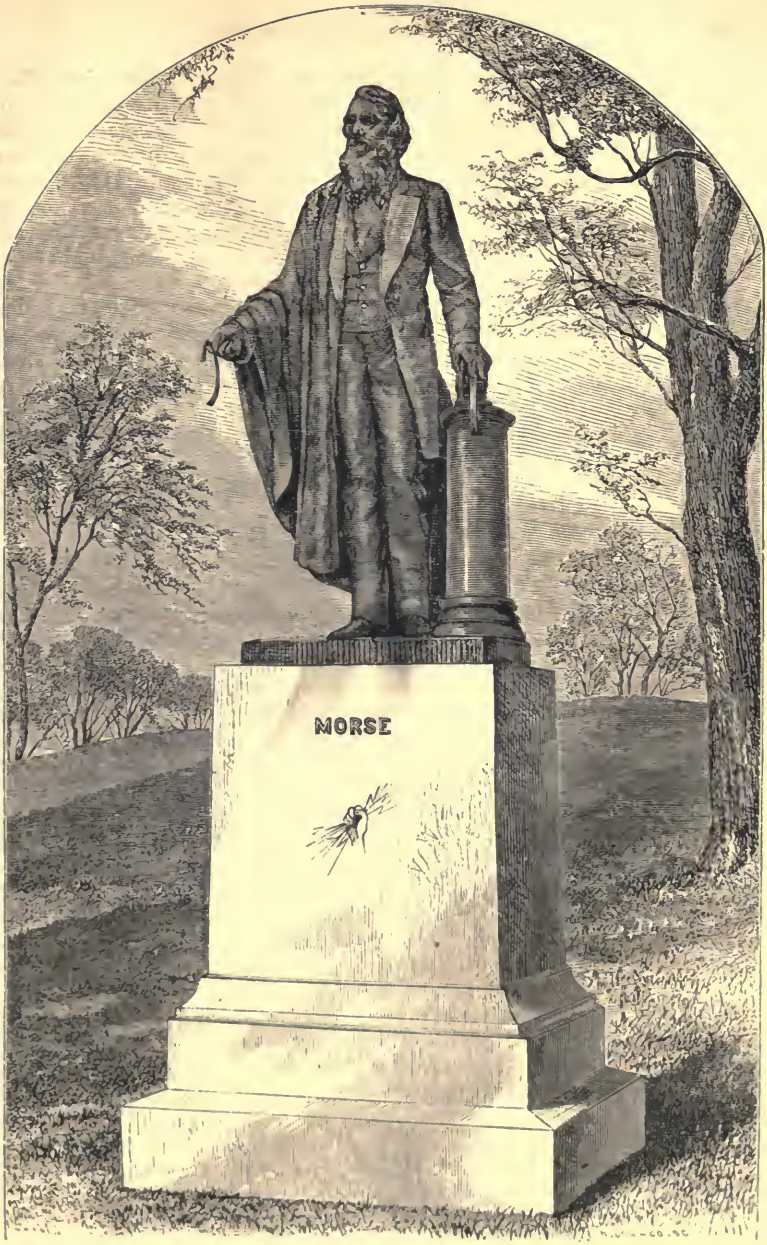
"But long may it be, my friends—very long—before any such resemblance of our illustrious friend shall be needed by those who have the advantage of his acquaintance, to refresh the image of his form and bearing as it exists in their minds. Long may we keep with us what is better than the statue—the noble original. Long may it remain among us in a healthful and serene old age. Late, very late, may He who gave the mind to which we owe the grand discovery to-day commemorated, recall it to his more immediate presence that it may be employed in a higher sphere and in a still more beneficial activity."

The mayor of the city responded; letters were read from President Grant, the Governors of several States, and one which left London at 8 P. M., and was read at five minutes to four.

The reception given in the evening was as enthusiastic as it well could be. The hall was densely crowded. Cheers from the gentlemen and waving of white handkerchiefs by the ladies greeted Professor Morse as he entered, and these were kept up for a considerable time. He gracefully acknowledged the salutation and seemed much affected by it. In the front of the platform was the speaker's stand, on either side of which was a magnificent vase of flowers. In the center also stood a small table, bearing the first telegraphic register ever employed on actual service on the continent, and which was kindly loaned by Mrs. Alfred Vail, of Morristown, N. J., whose property it is.

Hon. William Orton presided, and made the welcoming speech. We quote:

"In few instances have statues been erected to living men in token of the gratitude of their fellows for benefits conferred, enjoyed



Bronze Statue of Professor Morse.

Central Park, New York. Erected 1871.

and appreciated. Indeed, gratitude is rarely a settled conviction pervading the public mind, and persisting in conferring honor where honor is really due. Popular fancy is notoriously capricious. Frenchmen erected and then demolished the statue of Louis XIV. On its site was reared the column of Austerlitz to commemorate the achievements of the first Napoleon, and to perpetuate the glory of France. Within a few weeks the latter has been torn from its base in obedience to popular clamor, and the fragments of its beautiful bronzes have littered the *Place Vendome*. But Frenchmen are not exclusively capricious—nor Parisians the only image breakers. A century ago loyal New Yorkers erected a statue of George the III. Six years later, indignant patriots tore down the leaden effigy, converted it into bullets and fired them at the soldiers of their king. The glories they illustrated had been achieved through oppression and suffering, and the devastation and ruin which mark the track of war. Our work, on the other hand—although in honor of a man—commemorates an achievement which, in the infancy of its results, has already conferred inestimable benefits upon the people of more than half the globe, without having occasioned a pang of sorrow to a single human being. [Cheers.] If he is entitled to be esteemed a benefactor who makes two blades of grass to grow where but one grew before—with what honors shall we crown him through whom wars have been postponed and shortened—peace promoted and extended—time annihilated and distance abolished—and all the highest and noblest faculties of man multiplied, extended, and enlarged. [Applause.] Wonderful art! Most fortunate of artists! The loveliest tints that glow beneath the pencil will fade away; the granite and bronze this day reared will yield their particles one by one till not a trace remains; but the fame of our artist, and the wonder of his art will go down the ages with civilization and Christianity, till "the earth shall be filled with the knowledge of the glory of the Lord, as the waters cover the sea." [Applause.]

Brief addresses were made by Dr. George B. Loring, on the Telegraph and International Intercourse; and Dr. Samson, on the Telegraph and Literature; when the band played the "Morse Telegraph March."

Mr. Orton now announced that the hour of 9 P. M. had arrived, and that all the wires of America were connected with the instrument before him, and that Professor Morse would send a message. It was a sublime thought, that the touch of a finger on a tiny key, in the New York Academy of Music, would so soon vibrate throughout the continent. The audience seemed to see the 10,000 anxious faces looking down on the instruments in every town of the new world, waiting the expected sound. It caused intense silence. Miss Sadie E. Cornwell, a young lady of much attractiveness of person and manner, who had been selected to transmit the message, was then conducted to her place by Mr. Applebaugh, and sent the following

dispatch, every operator watching the manipulation in a stillness which was most impressive. The message was as follows:

GREETING AND THANKS TO THE TELEGRAPH FRATERNITY THROUGHOUT THE WORLD. GLORY TO GOD IN THE HIGHEST; ON EARTH PEACE, GOOD-WILL TO MEN.

At the last click of the instrument Professor Morse, escorted by Mr. Orton, approached the table and took his seat. As his fingers touched the key, tremendous cheers rung through the house, but were stopped by a gesture from Mr. Orton. Again that impressive silence fell on the house. Slowly the sounder struck "S. F. B. Morse," the Professor's hand fell from the key, the entire audience rose, and a wild storm of enthusiasm swept through the house, which was continued for some time; ladies waving their handkerchiefs, and old venerable men cheering as joyously as the youngest. Professor Morse, visibly affected, resumed his chair beside the President, and for several moments pressed his brow with his hands. The whole scene was thrilling and impressive. The tableau, the aged happy Professor, Miss Cornwell, wreathed in smiles, Mr. Applebaugh, exuberant, furnished a subject for an artist. When the excitement and applause had subsided, Mr. Orton said:

"Thus the father of the Telegraph bids farewell to his children."

The current was then switched off to an instrument behind the scenes.

Quickly along the wires came hundreds of responses, from half the cities of the earth—from all parts of America—from Canada, Nova Scotia, Cuba, England, Germany, Turkey, China, and Japan. A few are here introduced:

"FROM MILWAUKEE.

"Milwaukee sends greeting. The heavens declare the glory of God. The firmament showeth His handiwork. Day unto day uttereth the speech, and night unto night showeth the knowledge; your lines have gone out throughout all the earth, and your words to the end of the world."

"FROM JACKSONVILLE, FLA.

"Greeting: The glory of God, whose hand furnishes the lightning, has been reflected in him who has been honored as His agent in making the lightning the servant of man."

"FROM WASHINGTON.

"May the God of Storms bless you and make your path on this earth all sunshine. After this earth, peace."

"FROM PLYMOUTH, MASS.

"The Old Colony sends you joyous and kindly greeting. May your laurels be ever green as the memory of the Fathers, and your fame as enduring as Old Plymouth Rock."

"FROM CHARLESTON, S. C.

"From the far South we send back the kindly greeting of our father in telegraphy, and with our brothers of the North, East, and West uniting in making up the circuit of praise to him whose genius devised and whose patient energies worked out this the grandest invention of the nineteenth century."

"FROM LOUISVILLE, KY.

"Kentucky, whose jurists near a quarter of a century since first vindicated your legal title against all pretenders to the immortal fame as the inventor of the electric telegraph, to-day proudly rejoices to see the whole civilized world in affirmation of her judgment so unanimously and enthusiastically award you a place among the noblest benefactors of mankind. *Serus in cælum redeas.*"

The Hong-Kong message was dated at 1:15 P. M.!

General N. P. Banks then addressed the assemblage, on the Telegraph as a National Defense. Mr. J. D. Reid, editor of the *Journal*, and the suggestor of the statue, said: "I hold in my hand a paper which I regard as one of the most wonderful of modern times. There, sir, is the record of a subscription, wholly spontaneous, covering sixty feet of solid nonpareil, and which is not yet stopped. It bears the name of almost every messenger, operator, and telegraphic officer on the continent. The British provinces have vied with the United States in the heartiness of this tribute. It is a splendid record of love, which speaks with silent but most potential eloquence."

It was now announced that the hero of the hour would say a few words. As the venerable professor rose to respond, the whole vast audience broke into a warm cheer of salutation. It was a moment of intense interest. His venerable presence, his quiet and refined bearing, the feeling of relationship between himself and the audience, the thought that this was to be the parting word, all rendered the scene most solemn and impressive. He said:

"FRIENDS AND CHILDREN OF THE TELEGRAPH.—Whatever I may say must fall far short of expressing the grateful feelings, or conflicting emotions, which agitate me on an occasion so unexampled in the history of inventions. Gladly would I have shrunk from this public demonstration were it not that my absence to-night, under the circumstances, might be construed into an apathy which I do not feel, and which your overpowering kindness would justly rebuke.

"But where shall thanks begin, if, looking through all intervening instrumentalities, the Great Author of the gift of the telegraph to the world be not first of all acknowledged. 'Not unto us, not unto us, but unto God be all the glory.'

"When I consider that He who rules supreme over the ways and destinies of man, often makes use of the feeblest instruments to accomplish His benevolent purposes to man, as if, by grandest con-

trast, to point the mind with more marked effect to Him as their author, I cheerfully take my place on the lowest seat at His footstool. [Applause.]

"It is His pleasure, however, to work by human instrumentality. You have chosen to impersonate, in the statue this day erected, the invention rather than the inventor, and it is of no small significance that in the attitude so well chosen, and so admirably executed by the talented young sculptor whose work presents him so prominently and so favorably before you, he has given permanence to that pregnant and just sentence which was the first public utterance of the telegraph: 'What hath God wrought?'

"Little did that young friend, twenty-seven years ago, (and whose presence here to-night I most cordially greet), in the artless innocence of a devout heart, dream of the far-reaching effect of that first telegram which she indited, upon him who transmitted it. While as if by inspiration she struck the key-note of the invention, placing its real author upon the throne, it at the same time struck a responding chord within this bosom which still vibrates to temper with its ringing note, any proud aspiration of a selfishness that, unchecked, might be disposed to exclaim: 'Is not this great Babylon which I have built, by the might of my power?' Yes, little did that young friend dream that she had thus furnished me a substantial retreat from the conflicting elements, which public and private praise at home, and the gratulations of foreign nations, stir into activity in the human heart unless is kept in just prominence the Supreme Author of the gift.

"You have chosen to impersonate in my humble effigy, an invention which, cradled upon the ocean, had its birth in an American ship. It was nursed and cherished not so much from personal as from patriotic pride. Forecasting its future, even at its birth, by most powerful stimulus to perseverance through all the perils and trials of its early days—and they were neither few nor insignificant—was the thought that it must inevitably be world-wide in its application, and moreover, that it would every-where be hailed as a grateful American gift to the nations. It is in this aspect of the present occasion that I look upon your proceedings as intended, not so much as homage to an individual as to the invention 'whose lines' from America 'have gone out through all the earth, and their words to the end of the world.' . . . . . .

"To-night you have before you a sublime proof of the grand progress of the Telegraph in its march round the globe. It is but a few days since that our veritable antipodes became telegraphically united to us. We can speak to and receive an answer in a few seconds of time from Hong Kong, in China, where ten o'clock to-night here is ten o'clock in the day there, and it is perhaps a debatable question whether their ten o'clock is ten to-day or ten to-morrow. China and New York are in interlocutory communication. We

know the fact, but can imagination realize the fact? But I must not further trespass on your patience at this late hour.

"I can not close without the expression of my cordial thanks to my long-known, long-tried, and honored friend Reid, whose unwearied labors early contributed so effectively to the establishment of Telegraph lines. To the eminent Governors of this State and the State of Massachusetts, who have given to this demonstration their honored presence; to my excellent friend the distinguished Orator of the day; to the Mayor and city authorities of New York; to the Park Commissioners; to the officers and managers of the various and even rival Telegraph Companies, who have so cordially united on this occasion; to the numerous citizens, ladies and gentlemen; and though last, not least, to every one of my large and increasing family of Telegraph children, who have honored me with the proud title of *Father*, I tender my cordial thanks." [Applause.]

Professor Morse's address was listend to throughout with the deepest interest, and was delivered in a clear, steady voice, in which there was no evidence of feebleness or decay. It was a remarkable circumstance that, near midnight, as the great audience were leaving the Academy, a magnificent auroral display appeared in the sky, as if the elements were in joyous sympathy with the occasion and lighted their electric fires on that tranquil summer night to testify their approbation.

Well might Professor Morse rejoice that he had lived to see this day! Europe then possessed 450,000 miles of wire and 13,000 stations; America, 180,000 miles of wire and 6,000 stations; India, 14,000 miles of wire and 200 stations; and Australia, 10,000 miles of wire and 270 stations; and the extension throughout the world was proceeding at the rate of 100,000 miles of wire per annum. There were, in addition, 30,000 miles of submarine telegraph wire in successful operation, extending beneath the Atlantic and German Oceans; the Baltic, North, Mediterranean, Red, Arabian, and China Seas; the Persian Gulf, the Bay of Biscay, the Strait of Gibraltar, and the Gulfs of Mexico and St. Lawrence.

The close of his life now drew rapidly near. But the following letter written to Mr. Field, then attending the Telegraphic Convention at Rome, and one of the last the great telegrapher ever penned, shows that old age did not impair the vigor of his faculties. The chirography was also said to be wonderfully firm and clear:

"New York, December 4, 1871.

"My Dear Mr. Field: Excuse my delay in writing you. The excitement occasioned by the visit of the Grand Duke Alexis has just closed, and I have been wholly engaged by the various duties connected with his presence.

"I have wished for a few calm moments to put on paper some thoughts respecting the doings of the Great Telegraphic Convention, to which you are a delegate.

"The telegraph has now assumed such a marvelous position in human affairs throughout the world; its influences are so great and important in all the varied concerns of nations, that its efficient protection from injury has become a necessity. It is a powerful advocate for universal peace. Not that of itself it can command a "Peace, be still!" to the angry waves of human passions, but that by its rapid interchange of thought and opinion it gives the opportunity of explanations to acts and laws which in their ordinary wording often create doubt and suspicion.

"Were there no means of quick explanation, it is readily seen that doubt and suspicion working on the susceptibilities of the public mind would engender misconception, hatred, and strife. How important, then, that in the intercourse of nations there should be the ready means at hand for prompt correction and explanation.

"Could there not be passed, in the great International Convention, some resolution to the effect that in whatever condition, whether of peace or war between nations, the telegraph should be deemed a sacred thing, to be by common consent effectually protected both on land and beneath the waters?

"In the interest of human happiness, of that 'Peace on earth' which, in announcing the advent of the Savior, the angels proclaimed with 'good-will to men,' I hope that the Convention will not adjourn without adopting a resolution asking of the nations their united effective protection to this great agent of civilization.

"The mode and the terms of such resolution may be safely left to the intelligent members of the honorable and distinguished Convention. Believe me as ever, your friend and servant,

"SAMUEL F. B. MORSE.

"HON. CYRUS W. FIELD, Rome, Italy."

Professor Morse, familiar as his name was on both sides of the Atlantic, was facially known to comparatively few persons, and often attracted by his striking appearance the attention of those who had not the slightest suspicion that he was the celebrated inventor of the magnetic telegraph. His countenance and bearing were noticeable and impressive, even in Broadway, that great thoroughfare which swallows up individualities, and converts provincial whales into metropolitan minnows. The Professor's features were large, but regular, well-proportioned and harmonious on the whole, and made remarkable by his long, abundant white hair, moustache and whiskers, which he wore full and flowing. His complexion was rather florid, and his eye of an undecided color, inclining to gray, capable of great variety of expression, and often lighting up with what is considered the unmistakable fire of genius. Profound intellect, commanding patience, capacity for investigation, and supreme self-discipline were pictured in his face, and, apart from these mental and spiritual qualities, were reflected kindness of heart, gentleness of manner, and a temperament

thoroughly sympathetic. If America had had seven distinctively wise men, such as ancient Greece boasted of, Professor Morse would have been recognized at sight as one of the sages by every discerning eye. The air and manner of Nestor hung about him, and he always conveyed the impression—common to genius and high character—of reserved power. In stature he was not above the medium height; his bearing was quiet, and wholly unostentatious; his speech simple, direct and exact. He always felt a just and natural pride in his wonderful invention; was fond of talking of it on proper occasions, and to congenial companions, and at such times seemed to be illumined with the satisfaction which a great idea generates in one who has seen it advance to full fruition.

The following anecdote related by Col. Strother, the "Porte Crayon" of the magazines, portrays vividly the straits in which Morse found himself more than once before he achieved success:

"I engaged to become Morse's pupil, and subsequently went to New York and found him in a room in University Place. He had three other pupils, and I soon found that our professor had very little patronage. I paid my fifty dollars; that settled for one quarter's instruction. Morse was a faithful teacher, and took as much interest in our progress—more, indeed, than we did ourselves. But he was very poor. I remember that when my second quarter's pay was due my remittance from home did not come as expected, and one day the professor came in, and said courteously:

"'Well, Strother, my boy, how are we off for money?'

"'Why, professor,' I answered, 'I am sorry to say I have been disappointed; but I expect a remittance next week."

"'Next week!' he repeated sadly; 'I shall be dead by that time.'

"'Dead, sir?'

"'Yes, dead by starvation.'

"I was distressed and astonished. I said hurriedly—'Would ten dollars be of any service?'

"'Ten dollars would save my life; that is all that it would do.'

"I paid the money, all that I had, and we dined together. It was a modest meal, but good, and after he had finished he said: 'This is my first meal for twenty-four hours. Strother, don't be an artist. It means beggary. Your life depends upon people who know nothing of your art, and care nothing for you. A house dog lives better, and the very sensitiveness that stimulates him to work, keeps him alive to suffering.'

"I remained with Professor Morse three years, and then we separated. Some years afterwards I met him on Broadway, one day. He was about the same as before, a trifle older and somewhat ruddier. I asked him how he was getting along with his painting, and he told me that he had abandoned it; that he had something better he believed; and told me about his proposed telegraph. I accompanied him to his room, and there found several miles of wire twisted about,

and the battery, which he explained to me. His pictures, finished and unfinished, were lying about covered with dust. Shorty afterwards Congress made an appropriation, and Morse was on the high road to wealth and immortality."

During considerable portions of several years following Professor Morse's return from his European trip in 1839, he could be seen daily at Bedford's Eating House at the corner of Beekman and Nassau streets, New York, in company with Prof. Geo. Bush, Professor of Oriental Literature in New York City University, also author of Commentaries on the Old Testament, and often with other gentlemen of like tastes, each partaking of such frugal meals as men with plethoric purses seldom partake of. But these days of darkness came to an end, when Congress came to his aid, and Morse began ere long to tread firmly the high road to fame and fortune.

Prof. Morse was twice married; as has been mentioned, his first wife deceased in 1825. She was Miss Lucretia P. Walker, the daughter of a prominent citizen of Concord, New Hampshire, and left three children, now living. His second wife was Miss Sarah Griswold, daughter of the late Capt. S. B. Griswold, U. S. A., who, with one daughter and three sons by this marriage, survives him.

During the early spring of this year, Prof. Morse began to show unmistakable signs of approaching dissolution. Yet his departure corresponded with his life. Scarcely any perturbations of mind or body; all was calm and dignified, when, at 8 P. M., of April 2d, 1872, his spirit passed from earth. His death was beautiful in its unclouded vision. He held firmly to the Christian faith, and was buried from the Presbyterian church.

Dr. Adams, in his funeral sermon, said:

"A few days before his decease, in the privacy of his chamber, I spoke to him of the great goodness of God to him in his remarkable life. 'Yes, so good!' was his quick response, 'and the best part of all is yet to come.' Spared to see more than eighty years, he saw none of the infirmities of age either in mind or body. His delicate tastes, his love for the beautiful, his fondness for the fine arts, his sound judgment, his intellectual activity, his public spirit, his intense interest in all which concerned the welfare and decoration of the city, his earnest advocacy of Christian liberty throughout the world, continued unimpaired to the last."

Thus, with vigor of mind unimpaired; with serene faith, and steady hand, and undimmed eye; with peace in his heart and "Peace on earth" upon his lips, Professor Morse ended his earthly mission.

ALFRED VAIL.

IN the month of September, 1807, just as the leaves or our American forest-trees had begun to put on their rich autumnal tints, preparatory to their descent to mother earth, to mingle with their native dust, there was born into the family of a sturdy machinist, living in a substantial brick dwelling standing hard by the roadside, and within perhaps fifty yards of what has for generations been known as *Speedwell Iron Works*, a son, who in process of time came to be given the name of Alfred Vail. The road in front led from the county town, a mile distant, down the hill past the dwelling on towards the office, forge, and machine shops, and then at once across the bridge of the stream to the great iron region of the county, at Dover, Boonton, etc. The stream furnished the power for the forge-hammers, turning-lathes, and all the appliances by which steamboat shafts, cotton-press screws, and a thousand other forms of machinery were there wrought into shapes to answer the ends for which they were intended. Thus fashioned, they brought to the stalwart father and owner of the works the ingots which he constantly sought with an energy and industry seldom surpassed.

Down to within a short space of the point where the waters of the stream descended from the level surface of the dam, on either side of this beautiful Speedwell *lake*—as it is now called—for possibly three-quarters of a mile up stream, the pellucid waters had at that period mirrored the forms of a thick growth of forest-trees, majestic in the towering heights attained by a hundred years of undisturbed development. Away from the din and thug of the machinery, up the margins of this beautiful and charming dell, and on the bosom of the placid waters of the lake, many an hour had been charmed swiftly away by the dashing and romantic youth of the neighboring village.

Near the crown of a ridge overlooking the valley, through which flowed these headwaters of the Passaic, half a mile from the upper end of the lake-let, is the residence from which John Cleves Symmes

emigrated to Ohio, to take possession of his "Miami purchase." From that pleasant 'Solitude' went forth, in the bloom of youth, Anna Symmes, who soon became the bride of General Wm. Henry Harrison. Pretty, intelligent, and joyous then, she was ever interesting and cheerful in the presence of her large family, and beloved by a large circle of friends. She survived the decease of President Harrison nearly a fourth of a century, and was buried in the tomb beside her husband, on the estate at North Bend, which was taken for his home by Judge Symmes in 1788. As was natural, many of the early settlers of Cincinnati, Dayton, and other localities of the valleys of the two Miami rivers followed Judge Symmes from Morris County and other portions of "East and West Jersey." Israel Ludlow, the engineer who made the first survey and original plat of Cincinnati, was a native of Long Hill, in the south-western part of Morris County. His daughter, Mrs. Garrard, was married in Cincinnati to Judge John McLean, of the United States Supreme Court, himself a native of the north part of Morris County. Mrs. McLean survives her husband, and is residing with her sons at Lake Pepin, on the Mississippi. The last wife of Chief-Justice Chase was a descendant of Israel Ludlow also. Matthias Denman, one of the early associates of Judge Symmes, was also from Morris County, and ended his days near the Short Hills, in the same county.

The works at Speedwell had been purchased of Major John Kinney, an officer in the Revolutionary army, who for many years later was a resident of the adjacent village of Morristown, living quietly with his daughter—afterwards the wife of Judge Hornblower, who was for a considerable period the Chief-Justice of the Supreme Court of New Jersey, and a resident of Newark. Supported by his cane, with a buck-horn head, and silver-mounted, Major Kinney clad in knee-breeches, and the accompanying habiliments of the Revolutionary period, with a long cue pendant from his head, and a cocked hat surmounting it, could be seen any pleasant day nimbly picking his way around the "green," or through the streets of this ancient historic town at the period when Alfred Vail was growing to manhood. Major Kinney was the type of many men then living who were the remaining representatives of the "New Jersey Patriots," or the "Jersey Blues," who had but little to occupy their attention beyond telling of their exploits with the "Red-coats" during the War of Independence.

Since the days when Washington and his patriot army went into winter quarters within its borders, the County of Morris has been of historic interest. It was at the old *Ford Mansion*, in the eastern suburbs of the village of Morristown, that Washington took up his head quarters in the winter of 1779–80. It is but recently that the Hon. Henry A. Ford, the venerable grandson of its occupant in the days of Washington, was carried from its broad halls to his final resting-place, and there buried beside the remains of his distinguished father, the late Gabriel Ford, who for many years was Judge of the

(State) Supreme Court.* The mansion is in excellent repair, and is still occupied by the family of its late proprietor.

Washington's army, after the brilliant achievements at Trenton and Princeton, pursued the British in their flight as far as Kingston, but after thirty-six hours almost continuous movement, weary, foot-sore, and exhausted, it was turned aside to the Highlands of Morris County, and there, during the severe winter of 1776–77, the soldiers suffered not less intensely than they did at Valley Forge. But these sufferings did not dampen their military ardor or keep them from sleepless vigilance. The enemy in New York was closely watched. Means of communication were found in beacon fires through the long winter nights upon the high hills and mountains—spurs of the "Blue Ridge"—which skirt and pierce the county in each direction from the town. On the eastern borders of the county are what are termed the Short Hills, a range of highlands affording many magnificent views of the country as far north as the Orange County line in New York, and South to Raritan Bay and river. On a clear day the prospect from the higher summits in the direction of New York city, and out the Narrows through which the Hudson makes its way to the Atlantic, brings to the eye such views and charming landscapes as can nowhere else be seen in the vicinity of the great metropolis.

During the stormy period of the Revolution, a few miles out of Morristown, probably at or near the locality in the county which is now known as Littleton, on the route through Speedwell to Rockaway or Denville, Stephen Vail, the father of Alfred Vail, was born June 28th, 1780. His father, Davis Vail, was a Quaker, noted as a man of probity and good sense, who reared his family with a view to the practical realities of life. The county probably never furnished a more perfect specimen of *devotion* to an industrious and useful calling than was manifested by this Quaker's son. He was

* Hon. D. K. Este, the oldest member of the Cincinnati Bar, formerly the sole Judge of the old Superior Court of that city, and almost a nonagenarian, still in vigorous health, and daily seen walking the streets of the Queen City, studied law with Gabriel Ford, before the latter became Judge. Soon after commencing his law studies, in 1803, he visited at the office in New York, a friend who was then a student with Alexander Hamilton. On being introduced, Hamilton inquired if he was a son of Captain Moses Este, of Morristown. He replied that he was; when Hamilton rejoined: "Do you know, sir, that but for me you would not have been here? I knew your father well. In passing over the field with General Washington, after the battle of Monmouth, I recognized Captain Este (then a young man), and on inquiring found that he was severely wounded. I immediately ordered him carried from the field, and, with care and attention, his life was saved."

Judge Este's first wife was the eldest daughter of General Harrison. We learn from him that John Cleves Symmes was Judge of the Court in Morris County before the Revolution; that he was colonel of a regiment of the New Jersey Militia in the Revolution, and a member of the Continental Congress. Symmes was a member of Congress when he arranged for his "Miami purchase," and the President of Congress, Elias Boudinot, and others of that body, became interested with him, although not ostensibly so.

the eldest of a family of eight children, of whom Dr. Wm. P. Vail, now a resident of Sussex County, New Jersey, and nearly seventy, was the youngest. The doctor was in early life an apprentice of his brother, and assisted in building at the Speedwell Iron Works "the first steam engine that ever propelled a vessel across the Atlantic;" this was in 1819; the vessel probably went from Savannah.

Stephen Vail was the first man in New Jersey to set up a machine for making cut nails, which he started at Dover in his native county. As his mother was often heard to say, he was "a born mechanic." He early married a young lady of excellent sense and of great amiability and nobleness of character, who, although much of the time in feeble health, manifested the best qualities of a true housewife and an earnest Christian mother. Mrs. Vail was an active member of the First Presbyterian Church at Morristown during the pastorate of Rev. Albert Barnes, since so widely known by his commentaries on the Scriptures. She had several children; the eldest was a daughter, Harriet, and the second a son, Alfred, the subject of our present sketch. Following these were a daughter, Sarah, and a son, George, who on reaching his majority became associated in business as partner with his father, and for a Congressional term or two—fifteen to eighteen years afterwards—represented his native district in Congress. George Vail's present residence was erected under his own supervision on a beautiful lawn, on the opposite margin of the lake, from the house in which he was born, and it is, in its whole make, as sincere a specimen of architecture as the country affords. The material is the brown "pudding stone" of the region, of which in former days there were so many immense bowlders scattered upon the surface of the fields. Those he used were cracked open, and the inner variegated surface forms the outside exposure of the walls; an example which has found many imitators where purses had sufficient depth. The fine Methodist Church, built within a few years, on the south side of the public square of the town, at a cost of over $100,000, is of this material.

The whole surroundings of Morristown are now beautiful in an eminent degree. In the scenery, nature has scattered her favors with a lavish hand, in alternations of hill and valley, wooded mountain-sides, and rolling meadow lands, meandering streams and gurgling rivulets. Scattered through the town and in the suburbs, evidences of wealth and refined taste are seen upon all sides. The merchants of New York finding the region so salubrious and healthy are dotting the whole vicinity with fine residences. With improved railroad facilities, the city will soon be within an hour's travel.

Alfred Vail passed his early life at the home of his parents in the beautiful region which we have attempted to describe, and amid influences which were likely to engender and foster mechanical tastes. His youth until his seventeenth year was spent in attending school in Morris Academy. In that building many men who have attained

to eminence have sat as pupils, or presided as principals. For many years during the later decades of the past and the earlier years of the present century the town was especially famous for its superior educational facilities. When young Vail had left school, his tastes and the tendencies of his surroundings led him at once into the business of his father—the manufacture of steam-engines and other machinery manufactured of iron and brass. He was much in the brass foundry, and at an early age became noted for his skill. His constitution was like his mother's, delicate. With great fondness for study, especially in the mechanic arts and sciences, he had frequent longings for more thorough attainments. He had, however, become a citizen of full age before he broke away from his moorings, and began his preparation for college. With great zeal and energy he pursued his studies at the academy in Bloomfield, Essex County, until duly prepared he entered the New York City University in 1832, probably at precisely the period of Professor Morse's return from Europe in the packet ship "Sully." Vail graduated in due course in 1836, with decided honor, and with such recognition from the faculty as led to an early offer of a professorship in the institution.

The reader has learned from the remarks embodied in the sketch of Professor Morse, that Mr. Vail became *interested*, and finally *absorbed*, in improving the telegraph. We need not repeat here what has there been stated as to the precise manner in which he was led into an early association with Professor Morse. It was not the intention when those remarks were penned to make a separate sketch of Mr. Vail's career in connection with telegraphy, but new investigations have led to new determinations; and in the language of the senior associate, in his criticism of 1853, upon Professor Henry's course with regard to him, "there is a paramount duty to see that the truth of history be not violated, especially since the telegraph has become so large a part of the history of science, and is directly associated with the progress of the world." We have seen how completely Professor Morse had in his last days narrowed his recognition of Vail's connection with the telegraph to the one point of *pecuniary* aid. "To this complexion did it come at last!" Imperceptibly to himself, beyond a doubt, and with no preconceived purpose of injustice, but gradually, during many years of adulatory attentions from the governments and savans of the civilized world, he had become greedy of fame, and was led into studied silence on some matters which he had treated in an entirely different spirit when he was pinched with poverty and needed, not merely money, but skilled assistance to bring his bantling to perfection. His invention was *born*, it is true, but it had need to fulfill the requirements suggested by the question of Nicodemus, "and be born again," with the spirit of a new life, before it could go forth on its mission of peace and good-will, into all the earth.

From a paragraph in a pamphlet prepared by Professor Morse in 1853, which was soon after reprinted by him in Paris, we now quote

views as therein stated: "Alfred Vail being then (1837) a student* in the New York City University, and a young man of great ingenuity, having heard of my invention, he was naturally desirous of seeing it as it then existed in my rooms in the University. In the summer of that year he came to my rooms and I explained it to him, and from that moment to the present (1853) he has taken the deepest interest in the telegraph. Finding that I was unable to command the means to bring my invention properly before the public, and believing that he could command those means through his father and brother, he expressed this belief to me, and I at once made such an arrangement with him as to secure the pecuniary means and the skill of these gentlemen. It is to their joint liberality, *but especially to the attention, and skill, and faith, in the final success of the enterprise maintained by Mr. Alfred Vail, that is due the success of my endeavors to bring the telegraph at that time creditably before the public.* He was with me, assisting me in its construction, in its first exhibitions to the New York public in 1837, to the Franklin Institute, in Philadelphia, and to Congress in 1838; *and from his peculiar experience in all that relates to the invention,* was appointed one of my Assistant Superintendents on the passage of the Telegraph Bill in 1843."

In such terms did Professor Morse state his views of his signal benefactor, midway of his career with the invention, which has borne his name to the highest pinnacle of fame. Now, let the question be answered, what was it that Morse invented? We reply by quoting from Professor Gale's letter of 1872, printed in the sketch of Morse: "Was Morse's invention the achievement of a *machine*, or was it the discovery of *a law* or *principle* of science? The plain answer is, that the Morse invention is a machine, and nothing more."

Professor Gale, in the case of Smith *vs.* Downing, presented diagrams of the Morse machine (1836) as it passed (September, 1837,) into Mr. Vail's hands for an entire mechanical reconstruction throughout, to speak a language not wholly unknown to the first machine, but to perform entirely new functions, and to produce an entirely new system of signs and letters, which the first, by its structure, was physically incapable of being made to speak. Alfred Vail first produced in the new instrument the first available *Morse* machine. He invented the first "combination of the horizontal lever motion to actuate a pen or pencil, or style," and the entirely new telegraphic alphabet of dots, spaces and marks which it necessitated, and he did so prior to September, 1837, the month when the old instrument passed into his hands for reconstruction. His more perfect invention of a steel style upon a lever which could strike into the paper as it was drawn onward over a ground roller, and *emboss* upon it the same alphabetic characters, was not invented until 1844, about the time the first line of telegraph began to operate between

* Probably a resident graduate.

Baltimore and Washington. This instrument, somewhat transformed, still holds its place (1872) as practically the best ever invented, and after standing all imaginable tests is not likely to be jostled from its firm pedestal of fame in the "MORSE system."

The new machine was Vail's and not Morse's. The claim is clearly made, then, that Alfred Vail in the *first* place invented *an entirely new alphabet*, which he had the genius to foresee could be made to register easily on a horizontal line with one continuous movement of the paper from right to left. *Secondly*, he invented *an entirely new machine*, in which was the *first combination of the horizontal lever motion to actuate a pen, or pencil, or style*, so arranged as to perform the new duties required with a precision, simplicity, skill, and rapidity infinitely beyond the "stammering speech" and the creeping infantile movements of the true *Morse* machine, as originally conceived and brought forth! and, *thirdly*, Vail invented several years afterward the *new lever and roller*, which embossed into paper the wholly simple and perfect alphabetic characters which he alone originated,—*altogether the complete invention used from the first opening of a telegraph line until now*, a period of nearly thirty years. It registers as well as transmits its own messages, and from May 25th, 1844, until now it has proved itself the best instrument ever made, as is sufficiently proved by its almost universal use throughout the world, by all peoples *and with all languages*. If as Dr. Gale, their only early associate, wrote less than six months ago, "Morse's invention is a machine," what becomes of his claims as an inventor when the machine was conceived and brought forth from the brain and hands of another?

We now go back to the days of 1837, when the new alphabet had appeared, but when the new machine although conceived was not brought forth, and commence at this point by quoting a letter of Professor Morse, addressed to Mr. Vail at Morristown, and dated

"NEW YORK, Sept. 29, 1837.

"DEAR SIR,—I have only that which is agreeable to tell you. Since you were here I have a most satisfactory letter from Hon. W. C. Rives, and also from Captain Pell, who was the commander of the "Sully" on my passage home. They both have given me most unqualified testimony to the priority of my invention on board the ship.

"I have dispatched my letter to the Secretary of the Treasury, and have the papers and drawings nearly ready for the Patent office.* They will be on their way probably on Monday, or at farthest Tuesday.

"If you intend to do any thing in England or France no time is to be lost.†

* For the caveat obtained in October.

† Here the director is seen to be not Morse but Vail, with cash at his command to pay Morse's expenses abroad.

"I hold myself in readiness to execute the commission with respect to the portraits any time after next week, and hope to find the machinery in a state of such advancement that we may have time, before the winter session, to become perfectly familiar with it, so as to strike conviction at once into the minds of the members of Congress. When we exhibit its *powers* to the *powers that be*, Professor Gale's services will be invaluable to us, and I am glad he is disposed to enter into the matter with zeal. The more I think of the whole matter, the more I am convinced that if it is perseveringly pushed at this moment (so favorable on many accounts to its adoption by Government) the result will be all that we ought to wish for.

"We want the wire; we are ready for some important experiments necessary to establish with certainty some points not yet established by experiment.

"The *law of the magnetic influence at a distance* is not yet discovered, and your twenty miles of wire may enable us to make this discovery, and to keep ahead of our European rivals, as well as to proceed with certainty in our other arrangements.

"I have not yet heard from Dr. Jackson, in reply to my letter, and I hope he will be wise enough not to continue a claim in which he must be conscious he is wrong. If he persists he may give me trouble, but he can not succeed in the end, for I think I have evidence which will settle the matter.

"Truly your friend and servant, SAMUEL F. B. MORSE."

It will be borne in mind that this letter of Professor Morse was written on the next to the last day of September, from New York, to Mr. Vail, then at his father's residence at Speedwell, one mile north of Morristown, which is about thirty miles from New York.

The Morris and Essex Railroad was that season completed, so that by the way of Newark and Jersey City the journey (somewhat lengthened in distance from the old stage route to Elizabethtown Point, and thence by Gibbons's steamboats to the city) was even then accomplished in but little less than two and a half hours.* In building the Morris

* This railroad was among the earliest in the country, on a route not lying in the lines of the great thoroughfares of travel between the north and south, or east and west. The great through New York and Philadelphia line, which displaced the stages,—for many years so fine and marked a feature of travel through New Brunswick, Princeton, and Trenton, under the dashing control of the "whips" of the day, then just passed,—was by the steamboats of the Camden and Amboy line to Amboy, thence by railroad to Camden, opposite Philadelphia, on the Jersey side of the Delaware. The Camden and Amboy Railroad had been opened possibly a half dozen years before the Morris road, under the special manipulations of the great steamboat owner, R. L. Stevens, of Hoboken. He it was who was mainly instrumental in getting the celebrated charter, giving an exclusive right of way across the State for ninety-nine years, to this Pioneer Railroad Company, which has for twenty years and more excited so much unpleasant criticism upon New Jersey legislation, because of excessive railroad charges.

and Essex Railroad, Stephen Vail, the owner of the Speedwell Works, took a large pecuniary interest, for it gave him easy access to New York with his heavy freights of iron, manufactured for the markets of New York and the South. The ship-building interests in the vicinity of what was known as the Dry Dock in the East River portion of New York drew heavily upon his facilities for forging heavy shafts as well as for lighter machinery. In his half century of business-life he forged out and accumulated well towards a million of dollars, and finally tied up his fortune for the latest of his heirs as nearly as the laws of the State admit of. He died at the age of eighty-four years, July 12th, 1864. His son Alfred, in leaving home soon after his majority, to pursue a course of study in preparation for the ministry of the Presbyterian Church, had incurred his disapprobation, but he completed his course at college, and at the age of thirty associated himself, as we have seen, with Professor Morse.

Alfred Vail had at least as soon as the earlier part of September, 1837, entered with Professor Morse upon a series of experiments at Speedwell with the rude machine of Morse's own construction; which were conducted in a large building, erected for a cotton factory on a small stream some two hundred yards or more distant from the machine shops. When he had by working with Professor Morse satisfied himself as to the capacities of the system and machine of Professor Morse, Mr. Vail with his accustomed patience and the concentration of his fine natural and acquired abilities for invention, gave himself up to the work before him. His contract with his associate will be found embodied in the previous sketch. With high enthusiasm and that thorough conscientiousness which was so marked a feature of his character, he bent all his powers to producing a machine that should be equal to accomplishing the conception which five years previously had taken possession of Professor Morse, and who, in the interval, had been slowly developing the machine, which now to Vail's fine mechanical tastes was indeed a roughly formed embodiment of a finely conceived thought. Vail grasped the far reaching necessities of the case and entered upon his labor; so entirely was he absorbed that he would often rise from his bed in the still hours of night and jot down his thoughts. Meanwhile Morse had gone back to New York, and with Professor Gale was going through with experiments referred to in the letter to Vail, just quoted. Vail was not only perfecting his ideas on the newly projected machine which was to express his alphabet, but was also at the same time interesting his father and brother, especially the latter—who is still residing at Speedwell—in the scheme for telegraphing. Professor Morse, still in New York with Professor Gale, wrote:

"NEW YORK, October 24th, 1837.

"ALFRED VAIL, ESQ.: *Dear Sir*,—The wire proves to be *not good*,

it is made of bad copper, and is brittle, and in short lengths; we have much trouble and consume much time in soldering. The spark passes freely as yet, three and a half miles, and magnetizes well at that distance, though evidently with diminished strength, which would seem to indicate that there is a limit somewhere. We have just heard that Professor Wheatstone has tried an experiment with his method, *twenty miles* with success. *We have, therefore, nothing to fear.* We also learn that he has sent to take out a patent in this country. My *Caveat* will be in his way. Professor Locke, of Cincinnati, who has just returned, tells me all this, and he knows Wheatstone and his whole plan, and says there are no less than *six* disputants for the priority of the invention in England.

"More when I see you.

"Truly yours, etc., SAMUEL F. B. MORSE."

The "more when I see you" of this second letter indicates the early return of Professor Morse to Speedwell to note the progress of his young associate and at the same time to busy himself in painting the portraits of several members of Judge Vail's household, in fulfillment of the arrangement referred to in the first letter. The next three weeks were occupied by him in this way, while Alfred Vail was earnestly bringing forward the since noted *Morse* machine. Dr. John Locke, who brought the news to Professor Morse of so many claimants in England for honors in connection with the discovery of the telegraph, was himself for a considerable period absorbed in experiments in the same direction at his home in Cincinnati. Here we copy a letter announcing Professor Morse's safe return from Speedwell, etc.:

"NEW YORK, November 13th, 1837.

"DEAR SIR: I write a hasty line just to say that I arrived safely and am well this morning, so that I have not suffered by my journey. I arrived full in time to see the experiment the professor was making with the entire *ten miles*, and you will be gratified and agreeably surprised when I inform you that the result now is that with a little addition of wire to the coils of the small magnet which I had all along used, the power *was as great apparently* through *ten* as through three miles. This result has surprised us all, yet there is no mistake, and I conceive settles the whole matter.

"In haste, but truly yours, SAMUEL F. B. MORSE."

Dawn came at last, and with it quickening warmth. The winter weeks had been long to the patient genius and artisan, and also to the expectant artist, Alfred Vail completed his machine January 6th, 1838, over which a jubilee was held, Judge Vail becoming quite enthusiastic. During these months Dr. Gale had been diligent in his part of the labor experimenting in New York. Soon every thing

was ready for a public demonstration of the telegraph. At the jubilee a party of Morristown gentlemen were present by invitation, to witness the experiment of sending messages from the first floor of the old cotton factory to the attic. The next experiment, or rather the next work of the inventors was in laying a line of wire from Speedwell to Morristown, placing the wire along the ground inside the fence, on which a successful trial was made.

Now, the creature was truly born anew, and wholly regenerated was ready to become a true missionary to the benighted. Much labor was spent in the succeeding five years in endeavors to enlighten the heathen of America and Europe. The parents of the child took it in their arms and moved off. They gave "its first exhibitions to the New York public," next "to the Franklin Institute in Philadelphia," then at Washington to Congress and the Cabinet for three months, following January, as Professor Morse avers in one of his published statements.

We here copy a bill from the original in the handwriting of Prof. Morse, which may throw some light on the relations then existing between the parties as to pecuniary matters, and also in regard to what was passing at the time:

NEW YORK, April 11, 1838.

A. Vail in account with S. F. B. Morse for expenses of patent, etc.

Fare to Philadelphia	$3 00
Breakfast	50
Porterage	25
Fare to Baltimore	3 00
Dinner	25
Porterage and omnibus	50
Bill at Baltimore (over night)	1 50
Porterage	25
Porterage to cars	25
Fare to Washington	2 50
Porterage	25
Bill at Fuller's	21 75
Fare from Washington to Baltimore	2 50
Porterage	25
Bill at Baltimore (Sunday)	3 37½
Porterage and servant	37½
Fare in steamboat to Philadelphia	2 50
Dinner	50
Porterage and omnibus to cars	62½
Fare to New York	5 00
Porterage	25
Tea	50
Lodging at Bunker's	50
	$50 37½
Deduct Sunday at Baltimore	3 75
	$46 62½

As soon as he could well get off after failing to do any thing practically beneficial at Washington, Professor Morse left for Europe under the patronage of his friends at Speedwell, as is plainly shown from what he wrote to Mr. Vail in the first letter, copied in this sketch. We now copy from a letter to Alfred Vail, dated

"PARIS, October 11, 1838.

"I exhibited the telegraph to the Institute, and the sensation produced was as striking as at Washington. It was evident that hitherto the assembled science of Europe had considered the plan of an electric telegraph as ingenious, but visionary, and like æronautic navigation, practicable in little more than theory and destined to be useless. I can not describe to you the scene at the Institute when your box with the registering machine, just as it left Speedwell, was placed upon the table, and surrounded by the most distinguished men of all Europe, celebrated in the various arts and sciences—Arago, Baron Humboldt, Guy Lassac, and a host of others whose names are stars that shine in both hemispheres. Arago described it to them, and I showed its action. A buzz of admiration and approbation filled the whole hall, and the exclamations '*extraordinaire*,' '*tres bien*,' '*tres admirable*,' I heard on all sides. The sentiment was universal."

We next give an extract from a letter of Professor Morse to his brother, Sidney E. Morse, written a few days earlier:

"PARIS, October 1, 1838.

"MY DEAR BROTHER:

. . . . . .

"I have obtained a patent in France, although Wheatstone has also a patent here for his invention. They do not interfere, except that mine is pronounced far superior in simplicity and practicability. They are different inventions. After waiting until it was safe to exhibit my invention, I was desirous that the king should see it, and this would doubtless have been effected before this, but for the birth at the moment of the Count de Paris. In the mean time, through the kindness of Mr. Warden, late our Consul and member of the Institute, I was introduced to the celebrated Arago, who was desirous of seeing my telegraph. I carried it to the Observatory one morning and showed him its operation, with which he was delighted; he told me he had been written to by the Administrator in Chief of the Telegraphs in France, to obtain information in regard to Wheatstone's telegraph, for that the Government were about to try an experiment with the electric telegraph on an extended scale, and were desirous of ascertaining, among the various plans before the public, which was the best. M. Arago immediately offered me a letter to M. Foy, the Administrator of the Telegraph, in which he commends my telegraph. . . . . .

"In the mean time, at the request of M. Arago, I consented to exhibit it to the Institute at one of their sittings, and on the 10th of September I found myself in the midst of the most celebrated scientific men of the world. M. Arago explained in the most lucid manner the details and actions of the instrument, and I perceived by the expression of face, and the exclamations of surprise and gratification which were uttered by the members, as they crowded around the table, that the telegraph had won their regard.

"In a few days the various journals of Paris spoke in its praise."

. . . . . .

In the controversy with Professor Henry in 1853, Professor Morse, as has been noticed, speaks of exhibiting his telegraph at Washington for three months in the early part of 1838, but by the statement of expenses incurred on his trip to that city, rendered to Mr. Vail under date of April 11, '38, which we have printed for the first time, a shade of doubt is cast upon Professor Morse's accuracy as to the time of experimenting in Washington before Congress and the Cabinet. The fact that Morse's patent was ordered to be issued May 1st, 1838, is decisive as to the bill being correctly rendered, as we have printed it. In the same paragraph as that in which the three months at Washington is spoken of, Professor Morse states also that his telegraph "was exhibited to a large audience of a thousand or more persons, through ten miles of wire, in the New York City University, in the autumn of 1837," and yet we have now lying before us a letter from him in which he affirms that the first trial at "Speedwell, January 6, 1838," was with a "line of about three miles," which "was the longest which at that time had been made." He further says, in the same letter, "ten miles of wire, in two spools of five miles each, were prepared at the University, to exhibit to Congress the operations of the telegraph at Washington; and the trial at Speedwell was made when about three miles had been completed, and adds: "You will see in Mr. Alfred Vail's work, *The American Electro-magnetic Telegraph*, at pages 74, 75, the results of an experiment on a short wire of 1,700 feet, which I made on the 4th of September, 1837, in the University."

The letters to Mr. Vail and to Sidney E. Morse show the progress made to October 11, '38, in Paris. During that autumn, in the same city, thousands of visitors flocked to see his experiments. In the month of March, 1839, the exhibitions were made to the members of the Royal Society, of both Houses of Parliament, and the Lords of the Admiralty at Lord Lincoln's in London, afterwards the Duke of Newcastle,—the same gentleman who afterwards accompanied the Prince of Wales in his journey through the United States. Prof. Morse returned to New York in April, 1839, with the expectation of proceeding, within five or six weeks to Russia to establish the telegraph in that country, under a contract which he had made with

Baron Meyendorff, a Russian Government agent. During Professor Morse's absence in Europe, his associate, Dr. Gale, loaned Professor Henry, then at Princeton, one of the spools containing five miles of copper telegraph wire, with which interesting experiments were made at Princeton, the results of which were reported by Professor Henry, in a paper read before the American Philosophical Society, November 2d, 1838, and published early in 1839, under the title of "Contributions to Electricity and Magnetism." A copy was sent to Professor Morse at New York, which he found awaiting his return. This led to a correspondence between the two professors, manifesting great kindness on both sides, which was pleasantly continued for several years; but these relations, unhappily, were broken up by some real or fancied neglect of Mr. Vail—so closely associated with Professor Morse—who soon wholly disclaimed the charge, and stated his efforts to procure the facts and give Professor Henry due credit for his discoveries in Electro-magnetism in his (Vail's) book on the telegraph. Two letters from Professor Henry to Professor Morse, which are of historical interest, we reproduce—the *italics* are our own:

"PRINCETON, May 6th, 1839.

"DEAR SIR,—Your favor of the 24th ult., came to Princeton during my absence, which will account for the long delay of my answer. I am pleased to learn that you fully sanction the loan which I obtained from Dr. Gale, of your wire, and I shall be happy if any of the results are found to have a practical bearing on the Electric Telegraph.

"It will give me much pleasure to see you in Princeton after this week; my engagements will not then interfere with our communications on the subject of electricity. During this week I shall be almost constantly engaged with a friend in some scientific labors which we are prosecuting together.

"I am acquainted with no fact which would lead me to suppose that the project of the Electro-magnetic Telegraph is impracticable; on the contrary, I believe that science is now ripe for the application, and that there are no difficulties in the way, but such as ingenuity and enterprise may obviate. But what form of the apparatus, or what application of the power will prove best, can, I believe, be only determined by careful experiment. I can say, however, that so far as I am acquainted with the minutiæ of your plan, *I see no practical difficulty in the way of its application for comparatively short distances; but if the length of the wire between the stations be great, I think that some other modification will be found necessary, in order to develop a sufficient power at the further end of the line.* I shall, however, be happy to converse freely with you on these points when we meet. In the mean time I remain,

"With much respect yours, etc., JOSEPH HENRY."

We quote from Professor Gale's deposition, on this interesting point and append the second letter of Prof. Henry:

"It was *early* a question between Professor Morse and myself, where was the limit of the magnetic power to move a lever. I expressed a doubt whether a lever could be moved by this power, at a distance of twenty miles, and my settled conviction was, that it could not be done with sufficient force to mark characters on paper at 100 miles distance. To this Professor Morse was accustomed to reply—'If I can succeed in working a magnet ten miles, I can go round the globe.' The chief anxiety at this stage of the invention was, to ascertain the utmost limit of the distance at which he (Morse) could work or move a lever by magnetic power. He often said to me—'It matters not how delicate the movement may be; if I can obtain it at all, it is all I want.' Professor Morse often referred to the number of stations which might be required, and which he observed would add to the complication and expense. The said Morse always expressed his confidence of success in propagating magnetic power through any distance of electric conductors which circumstances might render desirable. His plan was thus often explained to me. '*Suppose*,' said Professor Morse, '*that in experimenting on twenty miles of wire, we should find that the power of magnetism is so feeble that it will but move a lever with certainty but a hair's breadth; that would be insufficient, it may be, to write or print, yet it would be sufficient to close and break another, or a second, twenty miles further; and this second circuit could in the same manner be made to break and close a third circuit twenty miles further; and so on, round the globe.*'"

"PRINCETON COLLEGE, February 24th, 1842.

"MY DEAR SIR,—*I am pleased to hear you have again petitioned Congress, in reference to your telegraph, and I most sincerely hope you will succeed in convincing our representatives of the importance of the invention.* In this you may, perhaps, find some difficulty, since, in the minds of many, the Electro-magnetic Telegraph is associated with the various chimerical projects constantly presented to the public, and particularly with the schemes, so popular a year or two ago, for the application of electricity as a moving power in the arts. I have asserted from the first, that all attempts of this kind are premature, and made without a proper knowledge of scientific principles. The case is, however, entirely different in regard to the Electro-magnetic Telegraph. *Science is now fully ripe for this application*, and I have not the least doubt, if proper means be afforded, of the perfect success of the invention.

"The idea of transmitting intelligence to a distance by means of electric action, has been suggested by various persons from the time of Franklin to the present; but until the last few years, or since the principal discoveries in electro-magnetism, all attempts to reduce it

to practice were necessarily unsuccessful. The mere suggestion, however, of a scheme of this kind, is a matter for which little credit can be claimed, since it is one which would naturally arise in the mind of almost any person familiar with the phenomena of electricity; but the bringing it forward at the proper moment, when the developments of science are able to furnish the means of certain success, and the devising a plan for carrying it into practical operation, are the grounds of a just claim to scientific reputation as well as public patronage.

"About the same time with yourself, Professor Wheatstone, of London, and Dr. Steinheil, of Germany, proposed plans of the Electro-magnetic Telegraph; but these differ as much from yours as the nature of the common principle would well permit; and unless some essential improvements have lately been made in these European plans, *I should prefer the one invented by yourself.*

"With my best wishes for your success, I remain, with much esteem,

"Yours truly, (Signed) JOSEPH HENRY."

We now insert a sentence or two from page 7 of the printed copy of Professor Henry's *Communication to the Board of Regents of the Smithsonian Institution, March*, 1857. "I was finally compelled under legal process to return to Boston from Maine, whither I had gone on a visit, and to give evidence on the subject. I distinctly declared that Professor Morse was entitled to the merit of combining and applying the discoveries of others, *in the invention of the best practical form of the telegraph.* My testimony tended to establish the fact that, though not entitled to the exclusive use of the electro-magnet for telegraphic purposes, he was entitled to his particular machine, register, alphabet, etc."

We now quote from Professor Morse, concerning the Morse-Vail alphabet and instrument:

"The main object in my telegraphic invention is *Telegraphic Recording*, and by means of electro-magnetism. The new alphabet, adapted to the purpose, is to be marked or printed at a distance. This alphabet is formed by breaking into parts, conventionally, a *continuous line*, thus:

n	*l*	*t*	*i*	*u*	*m*	*s*	*f*	*a*
— ·	———	—	· ·	· · —	— —	· · ·	· — ·	· —

and by different combinations of the longer and shorter parts of such line, with the longer and shorter spaces between the broken parts, the various letters are formed. These letters are produced at a distance, by commanding the magnetic power of a galvanic current, induced in an electro-magnet, causing the current to flow, or to cease flowing at certain determinate intervals of time. *Duration*, both in the flow and the cessation of the current, is an indispensable element

in the formation of a line, and also of a space, for forming the letters. The flow of the current of galvanism, and consequently the magnetic power, is caused by *closing* the circuit; the cessation of the current, and consequently the cessation of the magnetic power, is caused by *opening* the circuit. *The duration of a line* is marked by the *duration of the closing;* and the *duration for a space* is marked by the *duration of the opening* of the circuit. Two distinct and opposite acts are, therefore, equally necessary in forming every letter, to wit: *closing* and *opening* the circuit. The *closing* as well as the *opening*, and the *opening* as well as the *closing*, are equally and alike necessary to the result. They are indissolubly connected. *No letter* can be formed but by the conjoint acts of *closing* and *opening* the circuit. Hence, to produce the one or the other of these two acts, at pleasure, it is plain that the instrument at a station must be so constructed as to be controlled by the distant operator, enabling him to produce, at any moment, at his option, either of these two acts, to wit, the *closing* or *opening* of the circuit."

Professor Henry, it will have been perceived, confined Prof. Morse's claim to the very alphabet and instruments, which are now claimed as the invention of Alfred Vail. The question naturally comes up, why was this claim for Vail not asserted in the lifetime of Prof. Morse? We reply, that it was; and in due time it will be seen that Prof. Morse came at last to recognize the position in which he was placed, by the pregnant fact, that his original machine, made in New York, had been, by his own action, and almost of necessity, wholly discarded, in 1837, and had never been used in practical telegraphing; while the alphabet and machine which Vail had conceived and brought forth at Speedwell, was in universal use throughout the civilized world, having shown and maintained its superiority over all competitors during an interval of twenty-eight years since it was complete in its present perfected form, and began its service on the original Baltimore and Washington line, in practical telegraphing. Of course there was not the same lightness of form and perfection of finish, in the workmanship of the first instruments, but with the exceptions as to size and clumsiness the original instrument used in the Baltimore office is almost exactly similar to those in use at present.

It may be truly said of Alfred Vail that he was possessed of all the qualities which usually belong to high inventive genius. Of his father it had been said by his father's mother that Stephen was a "born mechanic;" perhaps as was said of some one, it might be said of Alfred that "he was born with a hammer in his hand." On leaving Morris Academy he entered his father's machine shops and diligently applied himself, more especially to work in the brass foundry. His health was generally delicate; he was, however, in accordance with the rules of the Works regularly in his place; and frequently brought from the foundry for the admiration of his family and friends

evidences of his skill as an artisan and also as an inventor. Before attaining his majority he had become deeply interested in religious subjects, and had determined to study for the ministry. This determination was a sore disappointment to his father, who, with his keen practical eye saw the natural gifts of his son for the business in which he was engaged. He had looked forward with pride and hope to the time when Alfred should become a partner with him, and have full scope given for the use of his best abilities and skill. When these hopes were dashed, there was bitter disappointment, which Judge Vail could not for years afterward wholly conceal. The younger son, however, soon became interested in the business, and the firm of Stephen Vail & Son had a long career of great prosperity.

Soon after graduating, Alfred returned home, associated with Prof. Morse, by the contract quoted in the sketch of that gentleman, and within eight months following had been with him at New York, Philadelphia, and Washington, as we have already noted, exhibiting the new invention. The junior member of the Speedwell firm had much to do with supplying the means for attendant expenses at that time, and during the several years forward to the appropriation by Congress, passed March 3d, 1843. For the four years intervening, from 1839 to 1843, the entire business interests of the country were greatly depressed. The country had seen profound political changes. Mr. Van Buren's presidential term had ended, and President Harrison within one short month, in the spring of 1841, had been inducted into office, and from the White House carried to his tomb. John Tyler became President, satisfying neither Whigs,—who elected him to the Vice-Presidency,—or the Democrats,—who opposed his election,—by his course as President. National affairs and the business of the people were in an unsettled condition. Congress enacted a general Bankrupt law early in Tyler's administration, and amid the general upheaval in public and private affairs the people were dejected, and in no condition to make new private ventures, or to allow their representatives in Congress to expend the public moneys in chimerical schemes of any sort. The want of success with Congress for Professor Morse's project may, in the light of these facts, be readily understood and properly appreciated.

Alfred Vail shared in all the disappointments and keen anxieties which weighed down Professor Morse through the struggles of those weary years of delay and trial. "His faith in the final success of the enterprise," spoken of by his associate, never forsook him. It was in no sense a wild or visionary scheme to him, he had measured it from center to circumference, and had an earnest realization of what the effect of his labor would be, and felt an unswerving Christian confidence in the final success of the system which he had been instrumental in producing. Mean time he had married, and becoming interested in building locomotives, with his father and brother for associates, he removed to Philadelphia and represented their in-

terests and his own in the firm of *Baldwin, Vail, & Hufty.* Mr. Matthew Baldwin afterward took the business and continued it for many years with signal success, and, until his decease, when it passed into the hands of M. Baird & Co.

The appropriation made by Congress, on the last night of the session, March 3d, 1843, for building the experimental Baltimore and Washington line of telegraph, brought into immediate requisition the scientific and mechanical services of Mr. Vail. He entered upon his duties, in completion of his pet scheme, with all the earnestness and patience for which he was so distinguished. There were fourteen months consumed in obtaining the materials and getting the line in order. The wire was of copper, and covered, like that used in the experimental trial at Morristown, with cotton and a coating of gum-shellac. The proposal to suspend it on poles was laughed at, as it would, it was supposed, be cut down and sold as fast as it could be put up. It was therefore inclosed in lead pipe and laid in the ground, and covered up with a depth of two feet of earth; and even then it was seriously debated whether or not it should be protected by a half pipe of heavy iron laid over it, so as to render it more difficult of access. After several miles had been laid, tests were applied, and the wire found to be useless. It was then dug up and suspended on posts, as at the present day. Professor Morse says it was abandoned in the winter of 1843–44, among other reasons, in consequence of ascertaining that in the process of inserting the wire into the pipe (which was, at the moment of forming the pipe from the lead at melting heat), the insulating covering of the wires had become charred at various and numerous points of the line to such an extent that greater delay and expense would be necessary to repair the damages than to put the wire upon posts. At length the wire was partly in working condition, Mr. Morse as superintendent of the Electro-magnetic Telegraph, was stationed in Washington, and Alfred Vail as assistant, was located, at first, at the Junction House of the Annapolis and Baltimore Railroad.

The following will show the method of exciting the public pulse adopted by these original operators.

Extracts from letters of Morse to Vail:

"WASHINGTON D. C., May 1, 1844.

. . . . "Get from passengers in the cars all the news you can and transmit. A good way of exciting wonder will be to tell the passengers to give you some short sentence to send me, and let them note the time and call at the Capitol to verify the time I received it. Before transmitting, notify me, (48). Your message to-day that 'the passengers in the cars gave three cheers for Henry Clay,' excited the highest wonder in the passenger who gave it to you to send, when he found it verified at the Capitol."

"WASHINGTON, May 11, 1844.

"Every thing worked well yesterday, but there is one defect in your writing. Make a *longer* space between each letter, and a still longer space between each word. I shall have a great crowd to-day, and wish all things to go off well. Many *M. C.'s* will be present; perhaps Mr. Clay; give me news by the cars. When the cars come along try and get a newspaper from Philadelphia or New York, and give items of intelligence. The arrival of the cars at the Junction begins to excite here the greatest interest, and both morning and evening I have had my room thronged."

In the sketch of Professor Morse we had the details of the great demonstration at evening (following the ceremonies at Central Park), when even China joined in the ovation, and now by way of contrast we give the early prattle of the telegraph as it chatted between Washington and Baltimore in May, 1844. The following was copied from a diary kept at the time by Mr. Vail.

In the correspondence *V.* standing for Vail, and *M.* for Morse.

"BALTIMORE, May 25, 1844.

"What hath God wrought? V. Yes, M.
"The city of Baltimore, V. Yes, M.
"Stop a few minutes, M. Yes, V.

"MAY 27th.

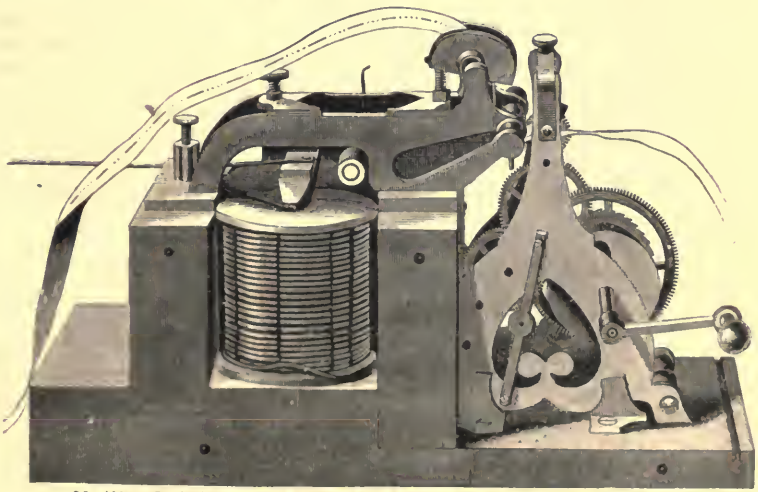
"I am ready, M. Yes, V. Have you any news, M.? No, V. Mr. Saxton's respects to you, M. My respects to him, V.

"What time have you? V. Nine o'clock twenty-seven minutes, M. What is your time, M.? Nine o'clock twenty-eight minutes, V. What weather have you, M.? Cloudy, V. Separate your words more, V. Oil your clock-work, V. Buchanan stock said to be rising, V. I have a great crowd at my window, M. Oh! ah! V. A Van Buren cannon in front with a fox-tail upon it, V. I wait for news, M. State Convention met at the Odeon, ten o'clock, A. M. Dr. Humphries of Somerset, Chairman; Thos. Perry, of Alleghany, Secretary," etc.

At the suggestion of his relative, Dr. Wm. P. Vail, Alfred Vail, in 1850, communicated to him in writing some minor items of interest which we now substantially reproduce:

"The telegraph was shown without charge until April 1st, 1845. Congress, during the session of 1844–45, made an appropriation of $8,000, to keep it in operation during the year, placing it under the supervision of the Postmaster-General. He ordered a tariff of charges of one cent for every four characters, appointing as operators of the line, Mr. Vail for Washington, and H. J. Rogers for Baltimore. "This commenced April 1st, 1845, and was to test the profitable-

Alfred Vail



Vail's Original Instrument—Wash'n and Balt. Line.

ness of the enterprise. Mr. Polk had just been inaugurated, and the city was filled with persons seeking office. A gentleman of Virginia came to the office of the telegraph April 1st, and desired to see its operation without cost. The oath of office being fresh in the mind of the operator, the gentleman was told of the rates of charges, and in compliance with his wishes it was suggested that he might ask Baltimore regarding the weather, etc. This he refused to do, and coaxed, argued, and threatened. He said there could be no harm in showing its operation, as that was all he wanted. He was told of the oath just taken by the incumbent, and of the intention to observe it faithfully. He stated he had no change. In reply he was told, that if he would call upon the Postmaster-General, and obtain his consent, the operation should be shown him gratis. He stated that he knew the Postmaster-General, and had considerable influence with some of the officers of Government, and that he, the operator, had better show it to him at once, intimating that he might be subjected to some peril by refusing. On being told that the operator did not think that he was at liberty to use the property of the Government for individual benefit when under oath to exact pay, the gentleman left the office in no pleasant mood.

"Such was the patronage received by the Washington office on the 1st, 2d, and 3d of April. On the 4th the same gentleman 'turned up' again, and repeated some of his former arguments. He was asked if he had seen the Postmaster-General, and obtained his consent. He replied he had not. After considerable discussion, which was rather amusing than vexatious, he said that he had nothing less than a twenty-dollar bill, and one cent, all of which he pulled out of his breeches' pocket. He was told that he could have a cent's worth of telegraphing, if that would answer, to which he agreed. After his many maneuvers, and his long agony, the gentleman was finally gratified in the following manner: Washington asked Baltimore, 4, which means, in the list of signals—*What time is it?* Baltimore replied, 1, which meant—*one o'clock.* The amount of the operation was one character each way, making two in all, which, at the rate of four for a cent, would amount to half a cent exactly. He laid down his cent, but he was told that half a cent would suffice, if he could produce the change. This he declined to do, and gave the whole cent, after which, being satisfied, he left the office.

"Such was the income of the Washington office for the first four days of April, 1845. On the 5th, twelve and a half cents were received. The 6th was the Sabbath. On the 7th, the receipts ran up to sixty cents; on the 8th, to $1.32; on the 9th, to $1.04. It is worthy of remark, said Mr. Vail, that more business was done by the merchants after the tariff was laid than when the service was gratuitous.

"The above details may strike many as very trifling and undignified. So they are in themselves; but therein consists their charm,

and their relevancy. Deep in our nature there is a principle that loves to contrast small beginnings with grand results. History is full of this. Development is characteristic of the works of God, and of man as well."

The sole idea, then, was to get appropriations from Congress, to extend the lines of telegraph; but Morse and Vail were not successful in their endeavors to get such an appropriation for completing a line to New York from Baltimore, and consequently they felt dispirited and discouraged. The Hon. Amos Kendall, who had been Postmaster-General the latter part of Gen. Jackson's term as President, and also under Mr. Van Buren, had been consulted with, and had thrown out the suggestion that he would be glad to talk over the idea of making the telegraph profitable as a private enterprise, should Congress fail to make an appropriation. The result was that in March, 1845, a contract was made between Mr. Kendall and the original Morse patentees—Morse, Vail, and Gale. Morse had previously sold a fourth interest to Hon. F. O. J. Smith, of Portland, Me., who, as a member of Congress, and chairman of the Committee on Commerce, had been very active in procuring the first appropriation for the line to Baltimore. By his contract Mr. Kendall became the agent of the three original associates, who vested in him the power to manage and dispose of their interest according to his discretion. He was to receive 10 per cent. on the first hundred thousand dollars and one-half of all sales made over one hundred thousand dollars.

No man by previous training, native integrity and ability, and acquired skill, could have been more admirably fitted for such a trust than was Mr. Kendall. He was an attorney, of superior attainments, with a large experience in the public office, which above all others could give him the best possible facilities for becoming acquainted with the wants of the public in the special direction in which he was now to be occupied. In the language of his biographer, "independently of the pecuniary advantages which he confidently believed would follow its judicious management, the subject had a peculiar fascination for a mind like Mr. Kendall's. It called into requisition his best executive ability, in the formation and administration of new telegraph companies," during a period of fifteen years. We could wish that Mr. Kendall's biographer had found place in his nearly seven hundred pages for at least a brief outline of his doings in connection with the telegraph; but, excepting brief allusions in a few letters written to his family at home by Mr. Kendall when out on journeys, there are scarcely three pages in the volume pertaining to the subject.*

* His journal brings to light some interesting and striking contrasts to present modes of travel. He was four days in going from Boston to New York, two from there to Philadelphia, two more to Baltimore, and one from there to Washington. From Washington to Pittsburg occupied nine days; beyond that point there were no public conveyances. He went down the Ohio in a flatboat to Maysville, from there to Cincinnati in a skiff, and from thence on foot to Lexington. He left Boston on

Mr. Kendall was two years the senior of Prof. Morse, and was, like Morse, a native of Massachusetts. He graduated at Dartmouth College, and in 1816 emigrated to Lexington, Ky., and was soon engaged in teaching in the family of the Hon. Henry Clay, and in prosecuting his law studies. His trip required over a month of constant travel.

In less than ninety days after he had control, Mr. Kendall was in conference with Mr. Butterfield * and others in New York, who had proposed to build a line from Buffalo to Springfield, there to connect with the projected line from New York to Boston. A line was early established between New York and Montreal; another from Baltimore to Harrisburg; one from there to Reading; another from Philadelphia to Pottsville. Many lines were built by O'Reilly and others without waiting for arrangements under Morse's patent. House used his instrument on a line from Cincinnati to Jeffersonville, Ind., opposite Louisville, and sent his first printed dispatch over that line in the autumn of 1847. Mr. O'Reilly was especially active and energetic in pushing his rival lines, and Mr. Kendall had his time and attention largely occupied in asserting in the courts the rights of the Morse patentees. Ezra Cornell, since made so famous by his large benefactions for educational purposes, laid the foundations of his large fortune by persevering labors in establishing new lines of telegraph.

The early and wide-spread use of the Morse system in Europe is attributable beyond question to the dashing energy of two young men, whose fathers were New York publishers until the catastrophes immediately following the commercial crisis of 1837. In the year 1848, two young New Yorkers, Chas. Robinson, aged 23, and Chas. L. Chapin, aged 19, having each had a few years' experience in the telegraph business, conceived the idea of introducing the American (Morse) system of telegraph into Europe. Although aware that their youth and the prejudices of foreign telegraphers would present serious obstacles to their success, they boldly set out on the expedition, with the best wishes of their friend, Prof. Morse, who, without personal connection or pecuniary interest, felt a warm interest in the success of the young men, and furnished them with introductions to many embassadors at the courts of Europe. Reaching the city of Hamburg, Germany, they at once gave public exhibitions of their system, and by their American energy broke down all opposition, and proved the Morse telegraph to be more simple and better than any then being used. A company of merchants was organized, a line of wire erected from the city to Cuxhaven, at the mouth of the river Elbe, and the system put into successful operation. Scarcely had this been done,

the 21st of February, and reached Lexington on the 12th of April, 1814; but spent nineteen days at various points on his route. The space that he took over a month to travel can now be spanned in forty hours or less railroad travel, and in "less than no time" with words by his perfected lines of telegraph.

* So well known since in connection with express and "overland stage lines."

when the young gentlemen received an official invitation from the Russian Government to visit the city of St. Petersburg. They exhibited their system several times to the Emperor Nicholas, and during their visit received marked testimonials of his appreciation of American enterprise and science. As guests of his Imperial Majesty, their stay was made exceedingly pleasant.

Soon after their return to Hamburg, our young Americans received notice of the appointment, by the King of Prussia, of a commission, composed of scientific gentlemen, to examine at Berlin all the several systems of telegraphy then in use, with an official invitation to present before them the Morse system. A prize of 1,000 thalers and a highly remunerative contract under the Government was offered for competition. Again our young Americans, after passing through the most difficult scientific tests, and despite their ignorance of foreign languages, succeeded in proving the Morse system superior to all others represented at the exhibition, and received most flattering comments upon their success and the perfectedness of the telegraph they presented. Before the commission could render an official decision to their sovereign, the civil revolution broke out, and for a time anarchy reigned. They remained long enough to witness some of the horrors which occurred while the mob ruled that beautiful city, and returned to Hamburg.

In the year 1850, finding that the disorder which ruled throughout Europe would render their longer stay of little service, they returned to their home, bringing with them gratifying testimonials and receiving from Prof. Morse warm thanks for the success which had attended the first introduction of American telegraphy into Europe.

In the year 1852, while Superintendent of the New York and Erie R. R. Telegraph, Mr. Chapin introduced the system of running trains by telegraph. The road at that time was using one track, and so thoroughly safe was his plan proven to be, that it was at once adopted along the whole route, and is still in use upon that road, and very many if not all the railroads in this country.

In the year 1854, Mr. Chapin was enabled to carry into operation the excellent system of telegraphy used by the police department of the city of New York. (In 1859 he introduced and perfected in that same city the system of Fire Alarm Telegraph, which is acknowledged to be the most perfect in use in the world.)

Professor Morse was appointed United States Commissioner to the Universal Exposition at Paris in 1867; and as a result there was sent out from the Government printing office at Washington a report, made by him, covering over 150 octavo pages, nearly all of which is taken up with statements concerning the *Telegraphic Apparatus and Processes in Telegraphing* used in Europe. What is known as his system is used there almost exclusively, therefore nearly the whole of the pamphlet is taken up with discussions respecting the Morse-Vail instrument, and the forms of it exhibited at the Exposition.

We quote from page 13 the first paragraph, published under the heading, *The Morse System Introduced in Europe:*

"In the spring of 1838 this telegraph was introduced to the European world through the French Academy of Sciences, under the auspices of the distinguished Arago, and in the autumn of that year it was breveted in France."

Evidently the time above named is six months too early, as Professor Morse's letters to his brother and Mr. Vail, which we have given, show.

Before leaving for Washington to exhibit the telegraph in 1838, Vail perfected two instruments for transmitting and receiving messages, which were used by Professor Morse and Mr. Vail for several years. The one used by Morse, after undergoing several alterations finally disappeared, and is now lost. That of Mr. Vail was carefully preserved by him. It was loaned by Mrs. Vail for use at the last ovation to Professor Morse in New York, and is still in the possession of the family at Morristown. With the exception of size and clumsiness, the instrument is almost exactly similar to those in present use, and can compare in effectiveness of working with the latest made. It was recently attached to the wires at Morristown, after having had an interval of rest of over twenty-five years, and it did its work as well as any. Its size is sixteen inches in length, seven inches in height, six inches wide; it has two magnets of three inches diameter. Its weight is twenty pounds. A capital photograph of the instrument was taken and is in possession of Mr. Lundy, editor of the *Republican*, at Morristown. The publishers of this volume furnish a fine engraving of this instrument on the page with Mr. Vail's portrait. The machine was left by Mr. Vail, carefully put away in a cabinet. In removing it, several years since, his family found attached to it a certificate, written upon soft printing paper with a lead pencil; this was folded up and fastened to the instrument. The original was preserved, and the publishers of the present work are happy in presenting to the public for the first time an exact fac-simile of this exceedingly interesting and important document, so far as retained.

Respecting the European instruments, referred to in the pamphlet, under the head named above, we extract the following:

"Adopted in countries renowned for consummate skill in the manufacture of philosophical instruments and delicate instruments of precision, it is natural to expect that the telegraphic instruments constructed by the accomplished mechanicians of Europe, while preserving the essential principles of the original telegraph, would take many forms and display a great variety of mechanical adaptations to produce the result most effectively.

"It ought to be here mentioned, however, to the credit of the

mechanicians of the United States, to whom was intrusted the manufacture of the first Morse telegraphic instruments in use on the American lines, that most of the instruments, not only in form, but in point of efficiency, compactness, and finish of workmanship, in accuracy of mechanical adaptation and durability, were not inferior to most of those now manufactured and used in Europe. Many of the modifications in form, and the varied distribution of parts of the mechanism in the American instruments, take precedence in time of the European instruments. But the beauty and accuracy of mechanical finish in the great majority of the instruments, it is conceded, are for the most part in favor of the European mechanicians. Especially is this the case in the ingenious instruments used for imprinting the common or Roman letter, first attempted by Vail as early as 1837; afterwards effectively accomplished by House, but subsequently the instruments for which were so admirably perfected by Hughes."

"Mr. Vail proposed and draughted his plan of a printing instrument, a description of which he has given in full, with diagrams, in his work entitled the *American Electro-magnetic Telegraph*, published in 1845. The complicated machinery necessary to produce the result, which seemed more curious than useful, and its slowness of operation, compared with the Morse-(Vail) instrument, were obstacles to its practical application. It was never practically tested."

"There is a peculiarity inherent in the nature of the original Morse-(Vail) code, which adapts it for recognition by each of four at least of the senses. It addresses not merely the sight by its written character, but the hearing, the taste, and the touch. It allows, therefore, of course, recognition by sound. This quality of the Morse-(Vail) code, of being recognized by more than one of the senses, does not belong to ordinary alphabetic characters, and arises from its novel construction. The principle of the code is this: it is formed from broken or unequal parts of a continuous line. It is composed of shorter and longer lines, or, as they are usually styled, dots and dashes, the shorter line being a dot, and the longer a dash. Each letter therefore is a line, or group of lines of different lengths, each group being a combination of these elementary parts, differing from all the other groups. For example, A is represented by a short and a long line, thus, – —; B, by a long line and three short ones, thus, — – – –; N, by a long line and a short one, thus,— –, and so on. These differences are at once recognized by the eye when written, but in the process of writing them by the Morse-(Vail) apparatus each group or letter is also indicated to the ear by its sound. The rationale of this peculiarity is this: in writing or printing either the dot or the dash in these groups the pen-lever produces two sounds, as well in making a dot as in making a dash. One of the two sounds is caused by the stroke of the pen-lever against the stop, which limits its motion in one direction, and the other of the two sounds is caused by the stroke

against the stop, which limits its motion in the other direction. These sounds are the natural and ordinary accompaniment of the process of writing or printing the letters.

"It might seem, at first blush, that, as each dot and each dash has equally two sounds, the one would be confounded with the other; but the difference by which a dot and a dash is distinguished the one from the other is, not by the number of the sounds, but by the difference of the interval, in the respective cases, between the first and second sound. In the one case, that of the dot, the two sounds which indicate it are separated by a short interval of time; in the other case, that of a dash, the two sounds have a *longer* interval between them. This difference of interval very soon becomes familiar to the ear, and enables the operator to hear as well as to see the transmitted dispatch. This acoustic effect is, in fact, the half-way result of a process arrested before its entire completion; completed, indeed, to the ear, but not, as yet, to the eye. Or the whole process may perhaps be better described as producing two results, either of which suffices, and therefore either may be dispensed with at pleasure, or both used together. This choice of results is exemplified in the various instruments using the Morse-(Vail) code. This sounder, for example, dispenses with the writing apparatus, and thus becomes a semaphore; on the other hand, the various inking instruments dispense with the sound, and are wholly dependent upon the written record, while the embossing instruments using the dry point have the double advantage of both results: they have the aid of the ear as well as of the eye. The inking process, therefore, it will be perceived, while gaining an advantage in one direction, loses an advantage in another."

Here we insert the text of the original fac-simile certificate as it was found, excepting the erasures made by Mr. Vail, and the word *combination* given in italics, which was undoubtedly the word used, but it was torn off when first discovered by Mr. Vail's family:

"This lever and roller were invented by me in the 6th story of the *New York Observer* office, in 1844, before we put up the telegraph line between Washington and Baltimore, and this *combination* has been always used in Morse's instrument. I am the sole and only inventor of this mode of telegraph embossed writing. Professor Morse gave me no clue to it, or did any one else, and I have not asserted publicly my right as first and sole inventor, because I wished to preserve the peaceful unity of the invention, and, because, I could not, according to my contract with Professor Morse, have got a patent for it.*

(Signed) "ALFRED VAIL."

* It is evident that Mr. Vail ended his first writing of this certificate with the words "first and sole inventor," and then signed his name. Afterwards he concluded to give his reasons, as is very plainly to be seen from the curve downwards of the words *because I wished*, etc, occurring under his first signature. See second page forward.

The commendable enterprise of the young Americans, Robinson and Chapin, in going to Europe, in 1848, to introduce the American system, although not productive of large pecuniary returns to them, had much to do with popularizing the system there, and bringing to Professor Morse the jewels, money, and fame which he gathered in rich profusion (and reluctantly shared—as to money—with his associates, owners of the patent) during the ten to fifteen years following. He was compelled by another associate to share with him in the free-will offerings made by European governments; and of the amount some five thousand dollars were paid to Mr. Vail; but of the other valuable presents sent, no token came to his hands; of the rich and costly jewels which on occasions bedecked the person of the one who was the recipient of all the honors, no gem reached the finger or person of any member of Mr. Vail's family; but had Mr. Vail have lived in contact with his associate for a century no hint of this failure would have escaped him. Can any one, however, give a good reason why he should not at least have received the share required by the terms of the original contract? Mr. Vail's youth and modesty at first had kept him from asserting his just right to attach his name to the machine, made to express his alphabet, as he should have done at the moment of producing the marvelous instrument. As time rolled on the difficulty of compassing the point between the two parties in interest increased in compound proportion. Honors were heaping upon Professor Morse, while Mr. Vail's name, but little mentioned at the commencement, was finally lost to public view. The last paragraph in the fac-simile certificate (see opposite page) manifests such a spirit as can not aid in making due assertion of one's rights in this self-asserting age.

"If it be asked what telegraphic system is specifically announced as most developed and extended throughout the world, the answer would seem to be definitely and summarily given in the proceedings of the International Telegraphic Convention, held in Paris in March, 1865, composed of the representatives of twenty of the principal nations of Europe, assembled for the special purpose of examining the various projects, in order to adopt a uniform system, and to regulate international telegraphy for their common benefit. They thus decree in their third article: 'L'appareil Morse reste provisoirement adopté pour le service des fils internationaux.' Concise as is this announcement, as the result of their deliberations, it proclaims that the Morse-(Vail) system—an American system—is preferred for special international service throughout Europe.

"Russia, Norway and Sweden, Denmark, Hamburg, Hanover, Prussia, Holland, Belgium, France, Wurtemberg, Bavaria, Saxony, Austria, Spain, Portugal, Baden, Switzerland, Italy, Greece, and the Ottoman Empire, by their respective embassadors, took part in this convention, and these, it will be seen, comprise all the nations of continental Europe.

This lever & roller were invented by me in the 6th story of the New York observer office in 1844 before we put up the Telegraph line between Wash & Bratts & ~~have been~~ this Combination has been always used in Morses instrument I am the sole & only inventor of this mode of telegraph embossed writings Prof Morse gave me no clue to it or did any one else & I have not asserted publicly my right as fast & sole inventor because I wished to preserve the peacefull unity of the inventor & because I could not according to my contract with Prof. Morse have got a patent for it

Alfred Vail

Alfred Vail

FAC-SIMILE OF ORIGINAL CERTIFICATE.

Words put in Script type on upper right hand corner are defaced in original. See pages 289 and 291.

"Great Britain was the only nation in Europe not represented in that convention; but even in Great Britain the Morse-(Vail) system is the one almost exclusively used in all her colonial possessions, in India, Australia, and Canada, and to an increasing extent also in the United Kingdom, especially in connection with the continental telegraph lines."

Several references have been made in extracts already given in this sketch to the volume on the telegraph which Mr. Vail published during 1845, the year in which the arrangement with Mr. Kendall was consummated. For several years following, Mr. Vail continued to reside in Washington, where his time and energies were consumed in experiments and improvements for perfecting the details which were from time to time embodied in building and working lines of telegraph, as they were constantly being put in operation—North, South, and West. He became an expert electrician, and devoted himself zealously to the interests then in hand. A warm and earnest friendship seems to have sprung up between Mr. Kendall and himself, and for four years, until 1849, they were, by their mutual interests, and as residents at the Capitol, in frequent intercourse.

Mr. Vail's thorough scientific and mechanical knowledge of all that pertained to the telegraph, and his deep interest in its success, made him a valuable counselor in the new projects which frequently came up for consideration during those early years in which Mr. Kendall was effectively urging forward the schemes for erecting new lines, then being set on foot in all directions.

In 1849 Mr. Vail purchased a residence in Morristown, and returning to his native place with his family, he spent his remaining years in scientific and literary pursuits. He left at least one work nearly ready for the press, on which he had spent years of labor. His correspondence was very voluminous, as evidenced by the immense accumulations which remain with his Manuscripts and Library. He was methodical, careful, and exact in all his affairs, and of spotless integrity. While not pushing and aggressive in his business, as men of less modesty are apt to be, Mr. Vail was not lacking in thrift or financial talent. As early as 1847 Professor Morse plied him most persuasively and urgently to sell to him his interest in the telegraph for $15,000. Said he, "Think calmly of what such a sum as fifteen thousand dollars is; I will," etc.; but Vail as steadily refused. He not only foresaw its success, but he felt all the interest that belongs naturally to one when contemplating the future of his offspring.

We may here fitly contemplate for a moment what transpired during the autumn of 1837, at Speedwell, when the two gentlemen, Morse and Vail, were each in processes of labor, to present in due time, the products of their genius. The pupil of West and Allston, and President of the "National Academy of Design," accomplished successfully his labor, and the product is not known or recognized as his, beyond

the village where it was brought forth. While the conception and product of the skillfully scientific mechanician, who had, it is true, received his University *degree*, but whose skill in mechanics was largely the product of nature, by *degrees* slowly, but surely, perfected in a machine-shop, has been known as his, only by his own family and a few others. The work which the artist did is wholly unknown, while the work of the scientific mechanician which the artist did not do—neither conceived or executed—has for over a third of a century borne the name of the artist, and made him a fame not surpassed in the annals of invention; while we here announce to the world the true work done by the artist, and the true claimant, for at least a share of the honors so long unduly appropriated. The original Vail instrument has a tenacity of life quite beyond that which usually appertains to similar creations of human skill; it is yet unrivaled. In the words of the distinguished associate and friend of both, the Hon. Amos Kendall, "If justice be done, the name of Alfred Vail will forever stand associated with that of Samuel F. B. Morse in the history of the invention and introduction into public use of the Electro-magnetic Telegraph." Such were the terms used by Mr. Kendall at a meeting of the directors of the Magnetic Telegraph Company, held at Philadelphia on the 16th of February, 1859. Mr. Vail had been a leading director of the company, and had then recently deceased. Resolutions of grief were offered, and Mr. Kendall in seconding and warmly supporting the resolutions, made use of the language we have already quoted, and said further, that "Mr. Vail was one of the most honest and scrupulously conscientious men with whom it has ever been my fortune to meet." He likewise said that "Professor Morse had always frankly acknowledged his indebtedness to Mr. Vail;" but it is altogether improbable that even Mr. Kendall at that time, or during the following ten years which he survived, was apprised of the extent to which Professor Morse was indebted to Mr. Vail for his fame as an inventor.

After Mr. Vail's decease his rights were less recognized than ever before. So far as Professor Morse's conduct could affect it, slowly but surely the star of his fame receded in the dim night of time. At length when the *evening* of Professor Morse's long life had come, the evening of that bright day when his fame had crystallized itself, so to speak, into a rock-based statue, conspicuously located, where the sun might ever continue to shed his glorious rays upon the stalwart bronze—on that evening, in New York, when the telegraphists half way round the world were chanting the praises of Professor Morse with their fingers on the instrument, which Vail invented, and made to talk on a lightning-line-of-light, over mountains, hills, and valleys, and possibly through deep seas, from China to America—on that evening, when in the full-orbed splendor of his fame—at that hour, when many of those who were doing Professor Morse honor were basking in the rays of the orb of day, then rising to the zenith of

their heavens—what was it that Professor Morse had to say of his old associate? "Alfred Vail, of Morristown, New Jersey, with his father and brother, came to the help of the unclothed infant, and with their funds, and mechanical skill, put it into a condition creditably to appear before the Congress of the nation. To these New Jersey friends is due the first important aid in the progress of the invention."*

These are the quiet, subdued terms in which Professor Morse was content to hand his co-inventor and early friends down to posterity. He makes no allusion to Alfred Vail which would lead any one to suspect that he was any thing more than a skillful mechanic; that Vail had ever done any thing beyond putting into form the conceptions of Morse's brain. To say the least, it was an unhappy holding off from a magnanimous and generous course. Each reader will have his own opinion of its justice; we suggest that it may not be improper to consider, in connection with this, the buzz of admiration raised in the French Academy of Sciences in the memorable month of September, 1838, as stated in the letter from Professor Morse of October 11th, 1838, written to Mr. Vail from Paris, and also the hint thrown out in the first letter of Morse, printed in this sketch.

Professor Morse did not survive that ovation many months, but he lived long enough to see and feel most keenly that he had not been generous; that he had made a great mistake, and had been led into injustice, for which he should in some way make reparation. The facts we have given had, in some quarters, found expression, in a semi-private way—they had come to the sight and hearing of Professor Morse; so that at last he sent for a near friend of Mr. Vail, who "found him in bed, 'sick from anxiety,' as he said, 'occasioned by these *attacks*.' In a conversation of two hours he several times said: 'The one thing I want to do now is justice to Mr. Vail.'" The witness goes on to say, "Just four weeks from that day he passed from earth, and I have never heard that he left one word for it; indeed I did not expect that he would." Here we leave Professor Morse and his relations to Alfred Vail. Our only purpose has been simply to bring the facts concerning this wonderful invention to the light of day.

Alfred Vail was born at Speedwell, Morris County, New Jersey, September 25th, 1807. He deceased on the 18th of January, 1859, in his fifty-second year, at his residence in South street, Morristown, within two miles of the spot where he first saw the light. There, in

* These, and the remarks made at the Delmonico banquet, inserted in the first paragraph on the eleventh page of the sketch of Morse, are of similar import. There, however, no reference is made to *mechanical skill;* the credit then given was simply for pecuniary aid—"furnishing the means to give the child—'a feeble child, of stammering speech'—a *decent dress*." It was natural that its parent should always speak of it as a child; for it died in infancy, and was buried at Speedwell. It never breathed after Vail's plump boy struck the bantling.

retirement, he had interested himself for ten years in such studies and literary pursuits as were congenial to his tastes, and in manifesting, in his quiet way, great purity of life and earnestness of Christian character. He was kind, genial, generous, a devoted husband, a warm friend. He was twice married—in 1839 to Miss Jane Cumings, of New York city; in 1855 to Miss Amanda Eno, of Connecticut. He left three sons, Stephen, Cumings, and George.

In person Mr. Vail was about medium height and of slight frame. His complexion was fair; his eyes large, lustrous, and usually soft, but often fired with deep earnestness. There was nothing of the visionary in him. He had a calm, steady realization of what effects his invention would produce, and a firm faith in its universal application within its sphere of labor. What man, in so compact a form, ever worked out grander and more admirable results toward the hastening of the day when "many shall run to and fro, and *knowledge shall be increased*" and *registered!* An incident will serve to show the wonderful perfection of the instrument and the keenness of perception attained by skillful telegraphists. A former expert operator at Hartford, Connecticut, recently escaped from the Middletown Insane Asylum, where he had been confined, and successfully eluded pursuit for a fortnight. A Mr. Hempstead, who had known the insane man, Sherman, intimately as a fellow-operator; while at work in the office, at Hartford, at night, suddenly recognized among the clatter of a score of messages passing over the wire, a sound which he at once declared was the touch of the missing Sherman. It proved to be a message from Wallingford, and an investigation showed that Mr. Hempstead was right in ascribing it to the insane man, who was found there, having dropped into the office in the former place, as was believed, and taken a hand at his old business.

PART II.

DELVERS

IN

SCIENCE AND LITERATURE.

CUVIER.

GEORGE CUVIER, the most eminent Naturalist in modern times, was born August 23, 1769. The place of his nativity was the little town of Montbelaird, in Switzerland, formerly the capitol of the district so-called, and which, up to 1796, formed part of the German domain of the Duke of Wurtemburg. His father was a distinguished officer in a Swiss corps in the pay of France, and who, after forty years' service, retired to his native town with a small pension and a military title of honor. He there espoused a young lady of good family, to whose admirable management and superintendence the future eminence of George Cuvier (who was the second son) is mainly to be attributed. He was of an extremely delicate constitution, and, with a view of strengthening his body and enlightening his mind, she directed his attention to the beauties of outward nature.

To the latest day of his life, Cuvier cherished with the most lively fondness, every reminiscence of this excellent woman; and, in his later years, when immersed in the toils of legislation and science, expressed the warmest gratitude to any one who brought him a bouquet of flowers, which his mother had more especially loved. Under her instructions alone, Cuvier was taught to read with facility when only four years of age. She also instructed him in sketching, while she fostered in every way the desire for solid information which he so early manifested, by procuring a supply of historical and scientific works calculated to expand his youthful mind. When of age to learn Latin, she not only attended him to and from school personally, but even undertook the superintendence of his daily lessons, and had the satisfaction of finding that he maintained a superiority over all his school-fellows. When ten years old, Cuvier was removed to a higher school called the Gymnase, where his progress attracted particular attention. He was singularly diligent and thoughtful, with an uncommon memory. But the author who attracted all his regard in his leisure moments was Buffon, the whole of whose plates, even at this early age, he faithfully copied and colored; manifesting at the

same time the most extraordinary aptitude for mastering the driest details of nomenclature. His acquisition of the dead languages, Mathematics, and Geography was not less remarkable, and he pursued all these studies with an ardor that seemed incompatible with the indulgence of childish sports.

Cuvier was intended for the church, and, from the poverty of his parents, was a candidate for admission to the free school of Tubingen. In this competition, he composed and delivered a poetical oration on the prosperity of the principality, which he is said to have recited with astonishing effect; but, from the base treachery of his master in the Gymnase, he lost the just reward of his able composition. His merits, however, had now become so conspicuous as to attract the notice of Duke Charles, Uncle of the King of Wurtemburg, who, upon an interview with him, became so much interested in his welfare, that he sent him, upon his own charges, to the *Académie Caroline*, at Stuttgart—a seminary founded by the Duke himself, and in which he took the deepest interest.

This was in 1784, when Cuvier entered his fifteenth year. His varied talents, or rather his unbounded capacity, had now the means of expanding itself upon the wide range of studies now open to him. The pupils of this institution were instructed in almost every branch of knowledge, but more particularly those connected with civil polity; and many of them became in after-years the ministers not only of the various courts of Germany, but even of Russia, and other European states. Cuvier was inferior to none in the ready acquisition of every subject of study; but amidst all his occupations, that of Natural History was pursued with an ardor that increased in proportion to the means of self-instruction which he possessed. He read Linnæus, Reinhart, and all the best authors; inspected all the Museums within his reach; collected specimens, and drew and colored Insects, Birds, and Plants, in his hours of recreation. Even then he began to perceive the great advantages which the study of Entomology (anatomy of insects) would lend to his future investigations, while its prosecution led to the acquisition of habits of minute observation.

Cuvier had only been four years at Stuttgart, (during which time, however, he had won many marks of distinction; amongst others, the order of *Chevalerie*, which was only granted to five or six of the pupils out of four hundred), when the disturbed condition of France and Germany, occasioning the departure of his patron and the discontinuance of his father's pension, obliged him to leave that Seminary; and he took what appeared to his companions to be the most desperate resolution, of becoming tutor in a private family,—that of *Count d' Hericy*, a Protestant nobleman,—with whom he removed to Caen, in Normandy, in July, 1788.

Change of residence, society, and circumstances, however, could not for a moment check the persevering assiduity of Cuvier, and the transition from an inland to a maritime situation, only contributed

to direct his active mind into new channels of study and investigation. Here he began to study the anatomy of Fishes; compare fossil with recent species, and, from their dissection, was conducted to the development of his great views on the whole of the Animal Kingdom, by which he subsequently read the physical history of creation, through all its various phases, as in a book. Whilst engaged in making records of observations simply for his own guidance and use, he was unwittingly rectifying the mistakes and over-sights of all preceding and contemporary Naturalists.

Nearly six years passed over Cuvier's head thus usefully and tranquilly employed, while France was undergoing the dreadful ordeal of the revolution. But its impulse at last reached his retreat. A society or union, like those organized by the populace throughout every other part of the Empire, and which armed the inhabitants against themselves, was about to be established at the neighboring town of Fecamp, when Cuvier, perceiving the impending danger, induced his employer and the neighboring land-holders to anticipate its formation by constituting the Society themselves. Of this body, Cuvier was appointed Secretary, and the members, instead of discussing sanguinary affairs at their meetings, devoted their attention solely to the consideration of Agriculture. At one of these, a speech was delivered by a venerable-looking individual, who resided in the neighborhood under the character of a surgeon. Cuvier, however, although he had never seen him before, quickly recognized in the speaker the author of certain valuable articles on Agriculture in the *Encyclopedie Methodique*, and, approaching him after the sitting was finished, he addressed him as the *Abbé Tessier*. The old man was at first much alarmed, for he had fled from Paris, and concealed himself under his present disguise, to avoid the common doom of all who then bore the hated name of Abbé; but Cuvier soon quieted his fears, and they became thenceforward the most intimate friends.

Tessier perceived at once the extraordinary talents and acquirements of his new acquaintance. "At the sight of this young man," he wrote to his friend Jussieu, "I felt the same delight as the philosopher who, when cast upon an unknown shore, there saw traces of geometrical figures. M. Cuvier is a violet which was concealed among common herbs. He has great acquirements; he draws plates for your work, and I have urged him to give Botanical lectures this summer. He has consented to do so, and I congratulate the students on the fact, for he demonstrates with great method and clearness. I doubt if there could be found a better Comparative Anatomist; he is indeed a pearl worth picking up. I contributed to draw M. Delambre from his retreat: do you now help me to draw M. Cuvier from his, for he is made for science and the world." The result of these warm recommendations was the transmission of some of Cuvier's papers to Paris, where their great value was properly appreciated; and in a few months afterwards he was appointed colleague of M. Mert-

reid in the newly created chair of Comparative Anatomy at Paris, whither he removed, being then only twenty-six years of age.

Cuvier's first thoughts, on finding himself placed in a respectable and permanent situation, were for his distressed relatives. His mother was then dead, but he invited his father and brother to come and live with him; and after seeing them comfortably settled, he applied himself to his favorite studies with a zeal that nothing could repress. He was every-where heard with delight and conviction, for he had already, before coming to Paris, adopted those extensive views, and arrived at those profound and sagacious conclusions, which guided his investigations into physical nature, and shook to their base all the then existing systems of Linnæus and other Naturalists. Besides his public lectures and private pursuits, he published, during the first year of his residence at Paris, more than half a dozen treatises on various subjects of Natural history, in which the most expanded views were combined with evidence of the minutest accuracy and arrangement. He especially impressed on his pupils the importance of Entomological study. A young medical student came to him upon a certain occasion, full of a discovery he supposed himself to have made in dissecting a human body. Cuvier immediately asked him if he was an Entomologist, to which the other replied in the negative. "Go then and anatomize an insect," said Cuvier, "and then consider the discovery you have made." The young man did so, and returned to Cuvier to confess his error. "Now," said Cuvier, "you see the value of my touch-stone." His discovery of the red blood of the leech, and the other animals which he grouped in the class *Annelides*, was made in 1796; and he read his celebrated memoir on the Nutrition of Insects, in which he showed the manner in which respiration was carried on by tracheæ, and how the nutritious fluid diffused itself over the whole internal surface of the body, so as to be everywhere absorbed.

Cuvier's removal to Paris was fortunately the period when the Arts and Sciences and social order were beginning to be re-established after the convulsions of the Revolution. The National Institute, one of the noblest of the societies of Europe, was founded in 1796: Cuvier was one of its original members, and for more than thirty years maintained the most distinguished rank amongst them. His appointment in the Jardin des Plantes had now fixed him in the midst of those objects to which his life would have been devoted by inclination; and from the day of his appointment to the day of his death, his labors were devoted to forming and completing the collections of which it can now boast, and which, in every respect, may almost be pronounced unrivaled. The intensity of his devotion to this occupation was strongly manifested upon a remarkable occasion in the year 1798. Bonaparte was then preparing for his expedition to Egypt, and deputed M. Berthollet to select some scientific men to accompany the armament. Berthollet particularly recommended Cuvier,

who, accordingly received a notification of his appointment; but, undazzled by the flattering nature of the proposal, and the prospects it held out of advancing his private interests, by bringing him into frequent and personal communication with Napoleon, he had the firmness to decline the honor, saying that he was conscious that he could much more advance the science of Natural History by the steady prosecution of it at the Jardin des Plantes than by any casual study of it elsewhere. And well did he prove the sincerity of his motives. Soon afterwards he published his *Tableau Elementaire*, consisting of 710 octavo pages, which was only a precursor to his great work, *Régne Animal*, or the *Animal Kingdom*, in which he adopted Daubenton's two grand divisions of vertibrate and invertibrate animals; dividing each into four great classes, and subdividing them into orders, genera, and species.

Cuvier also produced at the same time his first "Memoir on Fossil Bones," being an essay on the fossil bones of the larger quadrupeds, particularly those of the Elephant, the Mastodon, the Hippopotamus, the Rhinoceros, etc. A view of the specimens he collected, first opened to the gaze of foreigners after the peace of 1814, could alone enable any one to form a proper estimate of the labors of Cuvier. These collections, when inspected, broke up the slumber of many old institutions, caused renewed investigation into neglected specimens of other countries, and spread an active love for the pursuit of Natural History through all ranks of the people. And be it observed, that, when Cuvier first began this anatomical collection, his materials consisted of a few skeletons tied together like so many fagots, and put away in the lumber-room of the College.

Circumstances by degrees contributed to the success of Cuvier's labors. Wherever French Armies marched, it was their pride to collect whatever might enrich the increasing collections at Paris; and under the directions of Cuvier, the numerous contributions thus received were arranged according to the system which his eloquent lectures explained. By labors which knew little intermission, and with the help of these daily increasing stores, he was enabled to lay the foundations of Comparative Anatomy, to make the discovery of ancient Zoology, and to introduce a reform throughout the whole series of the Animal Kingdom. The death of M. Daubenton, in 1799, opened the way for the succession of Cuvier as professor at the College of France; and thus he discharged the double duty of teaching Natural Philosophy at the latter institution, and lecturing on Comparative Anatomy at the Jardin des Plantes. It is painful to state that his pecuniary remuneration for this great labor was neither commensurate in amount nor regular in its payment.

In 1800, Cuvier commenced his celebrated "Lectures on Comparative Anatomy," which were completed in five years. They were delivered from notes, and with a persuasive eloquence perfectly unrivaled. His skill in delineating forms was so great, and the rapidity

and exactness with which he produced them so extraordinary, that it seemed to his pupils as if he rather created living objects than inanimate representations. He did not consider the whole organic structure of each animal separately, but examined an individual organ through the whole series of animals in succession. It was by this method that he was ultimately led to the revealment of an order of facts illustrative of the theory of the Earth. It was by a combination of Mineralogical observations and the sciences relating to organic structures, that the successive eras of the earth were made apparent. As it would, however, only incumber the present sketch to notice the extent of his geological discoveries, we shall leave these.

To his researches into Fossil remains, Cuvier ever attached the utmost importance. His writings on these and other subjects are indeed so numerous, that it is impossible for us even to attempt a list of them. His labors increased with his years in magnitude and diversity, but only to show the extent of his capacity. After Bonaparte's return from Egypt, and being declared First Consul, Cuvier was elected Secretary to the class of Physical and Mathematical Sciences of which Bonaparte was President. The latter soon perceived the value and variety of Cuvier's talents, and selected him as one of the six general inspectors appointed in 1802, for the purpose of establishing a lyceum school in each of thirty cities of France. While absent on this duty, Napolean made the secretaryship of the class of Physical and Mathematical Sciences perpetual, with a salary of 6000 francs.

In 1803 Cuvier married Madame Duvancel, the widow of a fermier-general who was guillotined in 1794. She brought four young children home with her. Madame Cuvier appears to have been an admirable woman, and to have proved an invaluable blessing to her husband. She bore him four children, all of whom as well as his step-children, were successively taken from him, excepting one of the latter. In 1808 Cuvier was appointed one of the Councilors for life, of the New Imperial University, and Bonaparte (now Emperor) about the same time employed him to write a history of the progress of the human mind from the year 1789. Of this work to which Cuvier applied himself with his usual ardor, Baron Pasquier says: "We were present when it was read to the Emperor in the Council of State, and such scenes are never effaced from the memory. Napoleon had asked merely a report, and under the unassuming title, the skillful reporter had raised a monument which stands like a Pharos between two ages, showing at once the road that had been traversed and that which still ought to be pursued."

His situation as University Councilor brought him into the Emperor's presence to discuss affairs of administration. During the years 1809 and 1810 he was appointed to organize the Academies of the Italian States. In 1811 he was employed to form Academies in Holland

and the Hanseatic towns. Upon these duties he entered with all the enthusiasm of his benevolent mind, and no employment could have been more delightful. Napoleon was so much pleased with the manner in which he discharged his task, that he conferred on him the title of Chevalier, and also named him in 1813, *maitre des requetes* in the Council of State. During these various tours, Cuvier prosecuted his study of Natural History unremittingly.

The extraordinary talents of Cuvier, blended as they were with so much dignity of character and so much experience, were indispensable to France under all the successive changes of government which happened during his lifetime. The Consulate, the Imperial Government, the Restoration, the Monarchy of July, did but anew direct public attention to the civil services of a man whose attainments and sagacity were for all time.

He was favored, admired, esteemed, of all parties, and yet independent. Undistracted by all the changes that befell his country, he was ever occupied with her best interests, and endeavoring to diffuse that mental and moral preparation, without which he well knew the political rights she so urgently sought would prove the reverse of blessings.

After the restoration, Louis XVIII. bestowed on him the dignity of Councilor of State, and he was thus called on to take a considerable share in the internal administration of his country, as President of the Committee of the Interior, an office which involved him in endless details of business. In 1818 he visited England for six weeks, and during his absence from Paris had the distinguished honor of being created one of the forty of the *Académie Francaise*. In 1819 he was named Grand-Master of the University, and in the same year was created a Baron. In 1826 Charles X. bestowed on him the decoration of grand officer of the Legion of Honor, and his old sovereign, the King of Wurtemburg, about the same time made him commander of the order of the Crown. During the same year he lost the favor of the Court, by steadily refusing the appointment of Censor of the Press; but he incurred a much heavier dispensation in the loss of his only remaining child, Clemantine, a beautiful young woman, on the eve of marriage.

In 1830 he again visited England along with his step-daughter, Mademoiselle Duvancel, and they happened to be in London during the Revolution of the Barricades. On his return to Paris, Cuvier was most graciously received by Louis Philippe, by whom he was, in 1832, created a Peer of France. But he lived not long to enjoy his dignity. On the 9th of May he was attacked by partial paralysis in his arms, and aware in what it was to terminate, made his will, and arranged some important matters with the most perfect calmness. On the 11th his legs were paralyzed, but so powerful was the love of science within him, that he sought to illustrate a paper which he had previously read in the Institute by reference to his own case, saying, "It is the nerves of the will that are affected," alluding to the dis-

tinction between the nerves of the will, and those of sensibility, and the discoveries of Sir Charles Bell and Scarpa. To M. Pasquier, who saw him on the 12th, he remarked: "I had great things still to do. All was ready in my hand. After thirty years of labor and research, there remained but to write, and now the hands fail to carry with them the head." On the 13th, after vainly trying to swallow a mouthful of lemonade, he gave the draught to his step-daughter to drink, saying it was delightful to see those he loved still able to swallow. After which affectionate remark he calmly expired.—May 13th, 1832.

Cuvier was an uncommonly fine-looking man, both in person and features, his countenance being indicative of that talent and intelligence by which he was distinguished. His manner was noble and dignified; he was kind and conciliatory to all; and his charity and benevolence were unbounded. His application was prodigious. He was never without occupation, and his only relaxation was in the change of his objects of business or study. Amid his multifarious occupations out of his house, if he had only a quarter of an hour to spare before dinner on his return, he availed himself of it to resume some composition, interrupted since the night before, on some scientific subject. During the drives through the city, he read and even wrote in his carriage, having a desk fitted up in it for that purpose. He dined between six and seven, after which, if he did not go out, he immediately retired to his study, where he continued till ten or eleven. His extreme facility for study, and of directing all the powers of his mind to diverse occupations of study, from one quarter of an hour to another, was one of the most extraordinary qualities of his mind.

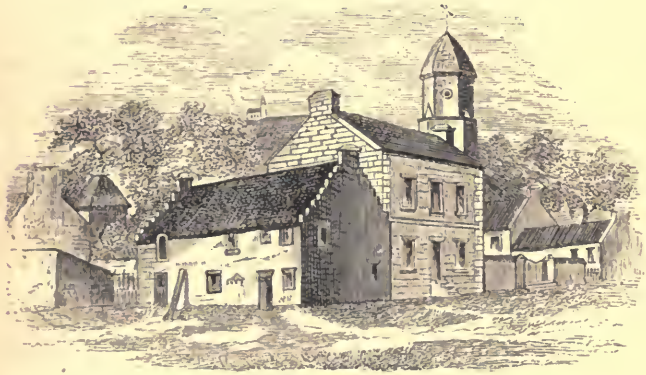
We conclude our notice of the great man by observing, that the habit he had acquired of never being idle, of being undisturbed by interruptions, and of returning to unfinished labors as if no such interruptions had occurred, was shown in this instance to be so valuable, that, if it is to be acquired by those who do not naturally possess it, it merits the strongest efforts of the mind for its attainment.

HUGH MILLER,

THE

STONE-MASON OF CROMARTY.

"Scientific men recognized in him one who could cope with them in their own department, who knew the facts as well as they, and could reason them out with greater power. Literary men acknowledged in him a brother who could mold a sentence or turn a period with the best of them. The ablest and boldest man in the country would have felt his knees shaking at the thought of engaging in a controversy with the stone-mason."—*Dr. McCosh.*



Where Hugh Miller was Born.

The Suitors of Cromarty, from Uncle Sandy's Garden.

HUGH MILLER;

HIS LIFE, LETTERS, AND WRITINGS.

BIRTHPLACE, PARENTAGE, AND EARLY CHILDHOOD.

THE name of Hugh Miller, we may safely presume, will be his most enduring monument; but the eye of the voyager, as he passes from the blue expanse of the Moray Frith into the land-locked bay of Cromarty, will discover on the left, crowning a swell of green upland, which runs crescent-like along the coast, a pillar of red sandstone, rising fifty feet into the air, and surmounted by a statue. The few white houses, embowered in garden foliage, which form the better part of the village of Cromarty, cluster beneath; and the sea, faced by a row of thatched fishermen's cottages, comes rippling, at every flow of the tide, to within a bow-shot of its base. The statue represents a grave, strong-built man, of massive head, and thoughtful face, who seems to look out steadfastly upon the waves. Statue and pillar constitute the monument reared by his countrymen to Hugh Miller.

Almost at the foot of the pillar, stands a humble cottage, and on the sward from which it rises is placed the village church-yard. In that cottage Hugh Miller was born; and during his boyhood and early youth he was dependent on a widowed mother, who maintained herself and her family by the "sedulously plied but indifferently remunerated labor" of her needle. In that church-yard are several head-stones, chiseled by his hand when he earned his bread as a journeyman mason.

How the son of a sailor's widow came to address and retain an audience as wide as the world of culture,—how the Cromarty stonemason qualified himself for achieving a European reputation,—is a question fitted to interest wise curiosity, and deserving of explicit and careful consideration.

Hugh Miller, as all the world knows, was the author of an autobio-

graphic work, entitled, "My Schools and School-masters." That book has been recognized by all judges as one of the most captivating and able of the author's performances, and has a place in English literature, from which it can not be moved; but it is no substitute for the biography of Hugh Miller. In the first place, it deals with but one portion of its author's career, and that the portion which preceded his emergence into public life. In the second place, there is much biographic material relating to Hugh Miller, unencroached upon in the "Schools and School-masters." From early boyhood, he was fond of jotting down particulars connected with his personal history, and for many years previous to his being harnessed to steady literary toil, he took great delight in letter-writing. In the third place, biography is necessarily a different matter from autobiography; the latter is simply one of the sources from which the biographer should construct his narrative. "It is possible," says Hugh Miller himself, "for two histories of the same period and individual to be at once true to fact, and unlike each other in the scenes which they describe and the events which they record."

Hugh Miller was born in the town of Cromarty, Scotland, on the 10th of October, 1802. The occurrence appears to have acted on the imagination of his father, as he had a "singular dream" respecting his first-born. The midwife remarked that the conformation of the head was unusual, and indicated, in her sage opinion, that the child would turn out an idiot.

Cromarty was a more important place seventy years ago than it is now, but its dimensions never exceeded those of a considerable village. It is one of several miniature towns which stud the shores of the Maolbuie, or Black Isle, a peninsular block of land, abutting on the German Ocean in a green headland, fringed with pine, known to mariners as the Southern Sutor of Cromarty. On the landward side of this headland nestles the little town. The Maolbuie, stretching westward, rises from encircling sea, occasionally in abrupt crags, generally in gradual undulation. Here and there, along the water-courses and in the hollows, are glimpses of green field and leafy wood, but the general impression is that of a huge swell of brown moorland, overblown by sea-winds, traversed by chill fogs, and constituting, on the whole, one of the most bleak and ungenial districts in Scotland. The natives of Cromarty have always been a hardy, long-lived race. The climate, though salubrious, is severe. The town is exposed at all seasons to high gales from the North Sea, laden with mist or sleet, and even at midsummer keen blasts from the Atlantic make their way through the western hill-gorges, send the spray of the frith whistling through the air, and pierce to every nook and cranny of the shivering town. But there are fertile spots in its immediate neighborhood, and in sheltered nooks the elm and poplar flourish; the air, except when darkened by sea-fog, is clear and bracing; a chain of hills, running along the frith on the north, leads the eye to the heights of Ben

Wyvis, sleeping in the pearl-blue of distance; there are brooks rippling through wooded dells, and caves hollowed in the rock; and at all times, and from almost every point of view, there is a gleaming of green or purple waters, wreathed with snowy foam. In favorable weather, Cromarty is a pleasant place; one who had passed in it a kindly childhood and youth might love it well. Nature, as seen in its vicinity, if not clad in Alpine grandeur, has many aspects of beauty and tenderness, and at least one aspect, that of ocean, in calm or in storm, of utmost sublimity.

Like all towns on the eastern coast of Scotland, Cromarty is inhabited principally by an English-speaking race, substantially identical with that found in the lowlands of Scotland. Hugh Miller never spoke the language of the Scottish Highlanders, and was apt in conversation to lay emphasis on the fact of his being a Teuton. But there was a dash of good Celtic blood in his veins. Donald Ross, called also Donald Roy, or the Red, the grandfather of his grandmother, was of the best Gaelic type, with the vivacity, courage, and religious susceptibility of his race. The history and character of Donald, as portrayed in the revering narratives of his descendants, were among the sacred influences of Hugh Miller's childhood. The figure of his gray-haired sire, standing up in the church of Nigg, and defying the Presbytery, in the Name of God, to join a minister, not called by its people, to its stone walls; the ring which Miller's grandmother had received, at the time of her marriage, from Donald, as her spousal ring to her *other* husband, the Head of the Church; the mysterious hints which would pass round the fireside circle in the evening, that this patriarch, like the men of God of old, had been privileged with visions of the unseen world, with whisperings out of the abysmal deeps of futurity,—all this was stamped upon the child's imagination, predisposing him, in the dawn of his sympathies, to look with reverence on the religious character, and preparing him to become, one day, a leader among the evangelical religionists of Scotland.

Strong, however, as the influence of his Celtic ancestry may have been on Hugh Miller, it was not so powerful as that derived from his Lowland fathers. He was descended on that side from a long line of sea-faring men, whose intrepid and adventurous spirit had led them from their native Cromarty, to sail, in the earliest times of Scottish history, with Sir Andrew Wood, or the "bold Bartons," and at a later period to voyage and fight under Anson, or to engage in buccaneering enterprises on the Spanish main. For more than a hundred years before the birth of Hugh Miller, not one of his paternal ancestors had been laid in the church-yard of Cromarty. To the latest hour of his life, he cherished the profoundest enthusiasm for his father, the hardy and resolute seaman, whose name he bore. He was only five years old when Hugh Miller, the elder, perished at sea; but he had already learned to love his father with an affection stronger than is common in childhood, and, "long after every one else had

ceased to hope," he might be seen on the grassy knoll behind his mother's house, looking wistfully out upon the Moray Frith for "the sloop with the two stripes of white and the two square topsails."

Miller has left us, in the "Schools and School-masters," a powerful and vivid sketch of his father, and the lineaments are those of a remarkable man. Very gentle, very brave, serenely invincible in every change of fortune, patient to endure individual wrong, but with a flash of keenest fire in him to avenge the cruelty or injustice which he saw practiced on others, he was great without knowing it, and, what is also perhaps an advantage, without its being known. Miller says finely, that there was a "bit of picture" in all his recollections of his father, and most picturesquely has he arranged the pieces in the mosaic of his narrative. We see the bold seaman, bronzed by the southern sun, asleep in his open boat on the Ganges, and mark him start on awaking as he meets the glare of a tiger's eye, its paw resting on the gunwale. We behold him afloat for three days in the open sea, on the bottom of an upturned boat, sharks glancing around him on the crests of the waves. He bears meekly the oppressions of a cruel captain, until his kind-hearted Irish comrade is being chained down to the deck beneath a tropical sun; then, the genial warmth in his bosom kindling into electric flame, he faces the tyrant. "The captain drew a loaded pistol from his belt; the sailor struck up his hand; and, as the bullet whistled through the rigging above, he grappled with him and disarmed him in a trice." At the action off the Dogger Bank he does the work of two men, and, when the action seems over, is utterly prostrate; but no sooner does the sign of battle fly again along the line than he springs to his feet fresh as if he had awakened from morning slumber. Not less characteristic is the steadfastness of his manly ambition to realize a competence. As wave after wave of adversity meets him, he rises through the swell, his brow showing clear and proud in the light of victory.

It was the deliberate conviction of Hugh Miller that his father was an abler man than he. To this opinion few will subscribe; but the more we study the character of the son, the deeper will be our conviction that it is essentially the character of the father, developed on the intellectual side with more of symmetry and completeness, and seen at last under softer lights. Physiologists would probably have something to say on this point. Modern science tends to show that there was more in Mr. Shandy's philosophy of character than Sterne's humor gives account of, and that, if we can rightly estimate the effect of local circumstance and other influences to modify or to transmute, the ground-plan of a man's character may be found written in his bones. Hugh Miller's father was, at the time of his birth, a man of forty-four; mature in every faculty; of marked individuality and iron will. His mother was a girl of eighteen, who had been brought up at her husband's knee, and had learned to revere him as a father before she accepted him as a lover. Throughout life she

displayed no special force of mind or character. The first child of such a marriage was likely to bear the indelible stamp of his father's manhood.

Fancy delights to construct oracles from the earliest recollections of men who have become famous. We must guard against attaching too much importance to the infantile reminiscences of Miller. Those he mentions are graceful in themselves, and form a singularly appropriate introduction to the life of a man of science. He remembered going into the garden one day before completing his third year, and seeing there "a minute duckling covered with soft, yellow hair, growing out of the soil by its feet, and beside it a plant that bore as its flowers a crop of little muscle-shells of a deep, red color." The "duckling," he tells us, belonged to the vegetable kingdom, though he could no longer identify it; the muscle-bearing plant was, he believed, a scarlet-runner. If there is in this incident any thing unusual, it is the circumstance that natural phenomena of form and color, so simple and common, should have powerfully affected the imagination of a child not three years old. The incidents first stored in memory are generally those of change or excitement—a storm, a removal, a journey, a visit to a puppet-show or waxwork. The forms of those natural objects by which a child is surrounded—leaves, trees, flowers—fall faintly on the mental tablets; probably not one man in a thousand retains a more vivid recollection of them than of the curtains round his cradle. During Hugh Miller's life the observation of a new fact in nature afforded him a thrill of pleasure which never lost its freshness, and it seems probable that the first consciousness of this pleasure arose in the breast of small, toddling, large-headed Hugh, when he opened wide his eyes to take the bearings of the mysterious duckling and the vegetable muscles.

More definitely important in a biographic point of view, are those incidents of Miller's childhood which formed what he calls a "machinery of the supernatural." About the time when the incomprehensible duckling grew out of the earth before his eyes, he thought that he beheld the apparition of his buccaneering ancestor, John Feddes, "in the form of a large, tall, very old man, attired in a light blue great-coat," who stood on the landing-place at the top of the stairs and regarded him with apparent complacency. He was much frightened, and for years dreaded a reappearance of the phantom.

Still more circumstantial is his account of what he saw on that night when, far away on the North Sea, his father's ship went down. "There were no forebodings," he is careful to tell us, "in the Cromarty cottage." No storm agitated the air, and though the billows of a deep ground-swell broke heavily under leaden skies, the weather occasioned no alarm. A hopeful letter had been received from his father, written at Peterhead, and his mother sat "beside the household fire, plying the cheerful needle." Suddenly the door fell open, and little Hugh was sent to shut it. "Day," he proceeds, "had not wholly

disappeared, but it was fast posting on to night, and a gray haze spread a neutral tint of dimness over every more distant object, but left the nearer ones comparatively distinct, when I saw at the open door, within less than a yard of my breast, as plainly as I ever saw any thing, a dissevered hand and arm stretched towards me. Hand and arm were apparently those of a female; they bore a livid and sodden appearance; and directly fronting me, where the body ought to have been, there was only blank, transparent space, through which I could see the dim forms of the objects beyond. I was fearfully startled, and ran shrieking to my mother, telling what I had seen; and the house-girl, whom she next sent to shut the door, apparently affected by my terror, also returned frightened, and said that she, too, had seen the woman's hand; which, however, did not seem to be the case. And finally my mother going to the door, saw nothing, though she appeared much impressed by the extremeness of my terror and the minuteness of my description. I communicate the story as it lies fixed in my memory, without attempting to explain it. The supposed apparition may have been merely a momentary affection of the eye, of the nature described by Sir Walter Scott in his 'Demonology,' and Sir David Brewster in his 'Natural Magic.' But if so, the affection was one of which I experienced no after-return; and its coincidence in the case, with the probable time of my father's death, seems at least curious."

Men who believe in a ghost-story seldom favor us with unqualified avowals of the fact. Hugh Miller seems to have been persuaded at fifty that the livid hand he saw at five was preternatural. The incident is thus invested with interest, in a biographic point of view. It affords us a glimpse into the subtlest workings of Hugh Miller's mind. We must, therefore, consider it carefully.

The appearance, to begin with, is to be classed among the more easily explicable phenomena of optical delusion. The child, from the day his mind began to receive impressions of any kind, had been encompassed with an atmosphere of superstition. In days of steamships and telegraphs, sailors and fishermen continue a superstitious race; but it is only by the strongest effort of imagination that we can realize the extent to which the natural and the supernatural were confounded in remote fishing-towns like Cromarty at the commencement of this century. Teach a child to look for ghosts, and he will be sure to see them. Hugh had learned to associate the idea of his father with a special manifestation of the awful and the supernatural. Often, while the embers were burning low on winter evenings, and every inmate of the cottage listened in awe-struck silence, had he hung upon the lips of "Jack Grant, the mate," as he told how his father had sailed from Peterhead beneath a gloomy twilight; how a woman and child who begged a passage were taken on board; how the wind rose, and the snow-storm lashed the vessel; how a dead-light gleamed out on the cross-trees; how a ghostly woman, with a child

in her arms, flitted round the master at the helm; how, when dawn glimmered over the sea, the ship struck, and rolled over amid the breakers on "the terrible bar of Findhorn!" and how the corpse of the woman, still clasping the babe in her arms, was floated out through a hole in the side of the wreck.

Turn now to the passage quoted. His father being away at sea, the child is sent, as the dusk thickens, to close the cottage door. The night-mist is creeping up from the sea. I have seen that mist—seen it through the eyes of childhood—on the moorland of the Maolbuie, a few miles west of Cromarty; and no one who has seen it can wonder that a vivid imagination should evoke spectral forms from its twilight imagery. The same power of fantasy which called up the ghost of old John Feddes to stand upon the top of the stair, revealed to the eye of the boy, as he peered into the mist on that melancholy evening, a dissevered hand and arm. There is one little circumstance which renders it matter of demonstration, that his mind was preoccupied by expectation of the marvelous. "Hand and arm" he informs us, "were apparently those of a female." How did he know this? A child of five could not distinguish between the "livid and sodden" hand and arm of a man and the "livid and sodden" hand and arm of a woman. His imagination, haunted by the woman of Jack Grant's narrative, created her.

The whole affair, then, resolves itself into a strong mental impression of little Hugh's throwing itself out, in bodiless form on the mist of the night. And as was the boy, so was the man. A sustained intensity of mental vision, a creative power of fantasy, characterized Miller to the last. Not powerful enough to overbear or to pervert the scientific instinct with which it was associated, it had a pervasive influence on his mental operations; the feeling, belief, impression, on his mind had for him a substantive reality; and there was an antecedent probability that, if the steadiness of his intellectual nerve were shaken by disease, or by excess of mental toil, some fixed idea might obtain the mastery over him and hurl his reason from her throne.

It has been said that his mother was not remarkable for mental power, or for strength of character. She had, however, one intellectual faculty in extraordinary vigor, to wit, memory, and she loaded it with knowledge of a peculiarly unprofitable kind. Her belief in fairies, witches, dreams, presentiments, ghosts, was unbounded, and she was restrained by no modern scruples from communicating either her fairy lore, or the faith with which she received it, to her son. Her faith in her legendary personages was inextricably involved with her belief in the angels and spirits of Scripture; and to betray skepticism as to apparitions and fairies was, in her view, to take part with the Sadducee or the infidel. "Such was the powerful influence," says Mrs. Miller, "to which little Hugh was subjected for the first six years of his life,—a kind of education the force of which he himself could scarcely estimate. Add to every thing else, that much of his mother's

sewing was making garments for the dead. Fancy that little, low room, in the winter evenings, its atmosphere at all times murky from the dark earthen floor, the small windows, the fire on the hearth, which, though furnished with a regular chimney, allowed much smoke to escape before it found passage. Fancy little Hugh sitting on a low stool by that hearth-fire, his mother engaged at a large chest, which serves her for a table, on which stands a single candle. Her work is dressing the shroud and the winding-sheet, the dead irons click incessantly, and her conversation, as she passes to and fro to heat her irons at the fire, is of the departed, and of mysterious warnings and specters. Suddenly, as the hour grows late, distinct raps are heard on this chest, —the forerunners, she says, of another dissolution. Her tall, thin figure is drawn up in an attitude of intense listening for these signs from the unseen world. The child has been surrounded and permeated with the weird atmosphere. Then a paroxysm of terror supervenes, and he is put to bed, to that bed in the corner, in a recess in the wall, where he can still see the work proceed, and hear the monotonous click-click of those irons, till his little eyes close, and the world of dreams mingles with that of reality. I have no doubt that the overpowering terror of those early times, the inability to distinguish between waking and sleeping visions, returned in his last days, stimulating the action of a diseased brain. The peculiarity of his mother's character told against him. There was plenty of affection, but no counterbalancing grain of any thing which could in the least qualify these tremendous doses of the supernatural. He did not learn to read so early as most children,—though, as he has told me, he learned his letters first when almost in arms, off the sign-boards above the shop doors,—so that, until after six, the marvelous, in its lighter and more harmless forms, as in 'Jack and the Bean-stalk,' etc., did not mingle with its darker and stronger shadows. From his mother Hugh undoubtedly drew almost all the materials for his 'Scenes and Legends,' and 'Lykewake,' etc., and every minutest touch I have given you has been gathered from his lips and hers."

Hugh Miller's mother was evidently one who, in the jargon of the spirit-rapping fraternity, would be called a good medium. Interpreted into the language of persons who are neither knaves nor fools, this will mean, that she was one who, having long permitted fantasy to be sole regent of her mind, had fallen into the habit of mistaking the pale shapes and flitting shadows of its ghostly moonlight for the substantial forms of noonday. Mrs. Miller closes her account of this singular woman with the following anecdote: "She told me that, on the night of Hugh's death, suspecting no evil, and anticipating no bad tidings, about midnight she saw a wonderfully bright light, like a ball of electric fire, flit about the room, and linger first on one object of furniture and then on another. She *sat up in bed* to watch its progress. At last it alighted, when, just as she wondered, with her eyes fixed on it, what it might portend, it was suddenly quenched—did

not die out, but, as it were, extinguished itself in a moment, leaving utter blackness behind, and on her frame the thrilling effect of a sudden and awful calamity." The power of distinguishing between visions seen when the eyes were shut and actual phenomena seen when the eyes were open, had manifestly been impaired in this woman; and we can not believe that the influence of so superstitious a mother upon Hugh Miller was not powerful, merely because he has refrained from saying much about her in the "Schools and School-masters." Had he completely emancipated himself from that influence, we might have had a full statement of its nature and extent; but, though he evidently believed some of the ghostly sights of his childhood to have been preternatural, he would instinctively shrink from the confession that his notions of the night-side of nature, and of the boundary line between the visible and the invisible world, were to the last modified by what he had learned at his mother's knee. It is fair to her to add, that her power of enchaining the attention of listeners, while she told her tales, was quite extraordinary, and that her son assuredly owed to her, in part at least, his genius for narrative.

FIRST SCHOOL—UNCLE JAMES AND SANDY—BEGINNINGS OF LITERATURE AND SCIENCE.

The brave, kind father, then, is dead; and the boy, gaze he never so long across the waves, will not again clap his hands and run to tell his mother that the sloop is in the offing. The girlish widow, with her son of five, and her two daughters just emerging from infancy, must face the world alone. Of fixed yearly income, she has about twelve pounds, but she is skilled as a seamstress, and applies herself industriously to her needle. By way of substitute for a father's authority over her children, and for a husband's counsels to herself, she has the vigilant, superintending friendliness of her two brothers, known to readers of the "Schools and School-masters" as Uncle James and Uncle Sandy. These occupied a single dwelling, into which they took one of the little girls, and in which Hugh lived as much as at home. He could hardly have been more happy in fireside guides and instructors. James the elder, was a saddler; Alexander, a carpenter. In any rank of society they would have been exceptional men. Thoughtful, sagacious, modest, independent; ardent in their love of knowledge, and with no inconsiderable stock of information; reverent towards God; mindful of duty—they were such as the best Scottish peasants and mechanics of the olden time used to be. "I never knew a man," says Miller, "more rigidly just in his dealings than Uncle James, or who regarded every species of meanness with a more thorough contempt." What a grand contribution to the education of Hugh Miller was made by Uncle James in leaving *that* impression on his memory and his heart! When Miller first

heard Dr. M'Crie preach, he wrote to his Uncle James: "In age and figure I know not where to point out any one who more resembles him than yourself." Collating this with his description of the military bearing and combined modesty and dignity of demeanor of Dr. M'Crie, we are led to form a favorable idea of Uncle James's outer man. Uncle Sandy had been in the navy, had fought in many engagements in the great French war, and had settled down in his native place to a life of happy industry, digging his sawyer's pit in summer in some protected nook of the green wood, and finding entertainment at even-tide in the wonders of the field or the shore. He fought his battles over again, and yet again, for the benefit of little Hugh; but it was from others, not from himself, that the boy heard of his personal exploits; and his estimate of military splendors was not extravagant. "Phrophecy I find," he said, "gives to all our glories but a single verse, and it is a verse of judgment." In after-life, Miller thought of writing a life of Alexander Wright.

Such were Hugh Miller's instructors from the end of his fifth year,—instructors to whom, as he justly testifies, he owed more than to any of the teachers whose schools he afterwards attended. The tales with which they charmed him called intellect and imagination into genial and healthful exercise. "I remember," he says, in an account of his early years, composed for Principal Baird when he was twenty-seven, and largely drawn upon in the "Schools and School-masters," "I remember that from my fourth to my sixth year, I derived much pleasure from oral narrative, and that my imagination, even at this early period, had acquired strength enough to present me with vividly-colored pictures of all the scenes described to me, and of all the incidents related." His eye had not yet opened on the world of books.

Hugh had been sent to a dame's school before his father's death, and in the course of his sixth year, after much labor and small apparent profit, he made the discovery that "the art of reading is the art of finding stories in books." Did ever child in Eastern romance light on so wonderful a talisman? The gates flew open and the gardens of knowledge stretched before him, the trees drooping with golden fruit, the earth radiant with flowers. Hugh Miller had made what he calls the grand acquirement of his life,—he could hold converse with books.

Now at last, like all children of talent, he reveled in the traditionary literature of the nursery: "Jack the Giant-Killer," "Blue Beard," "Aladdin and the Wonderful Lamp." Two other books gave him equal or greater delight: the "Pilgrim's Progress," and Pope's "Homer." "I saw," says Miller, "even at this immature period, that no writer could cast a javelin with half the force of Homer." Pope's transmutations of the "Iliad" and "Odyssey" have often been favorite reading with children. One of the choice

sports of Arnold's early boyhood was to act the battles of the Homeric heroes, and recite their several speeches according to Pope.

Hugh was now promoted from the dame's school to the parish school, and introduced into the society of one hundred and twenty boys. These, with a class of girls, bringing the whole number up to one hundred and fifty, were under the superintendence of a single master; and, when it is added that the competence of that master's acquirements and the excellence of his character were qualified by sluggishness, and associated with no force, fineness, or sympathetic richness of mind, it will be evident that little deserving the name of education could be had in the place. A boy of six, however strong his intellectual bent, requires a certain amount of well-applied compulsion to induce him to prefer his lessons to his play. Hugh left to do as he choose, preferred the latter; but if, in his lessons, he was "an egregious trifler," he was intellectual enough in his sports. In addition to the nursery treasures already mentioned, the narratives of Cook, Anson, and Woods Rogers afforded him inexhaustible delight, and inflamed him with a passionate desire to be a sailor. He spent much of his time sauntering about the harbor, or peering and prying aboard the ships. One of his amusements was to trace on the maps of an old geographical grammar the path of vessels to and from the countries visited by his father or by Uncle Sandy. He began to compose before he could write. "I was in the habit," he says, in the account of his life previously referred to, "of quitting my school companions for the sea-shore, where I would saunter for whole hours, pouring out long blank-verse effusions (rhyme was a discovery of after-date) about sea-fights, storms, ghosts, and desert islands. These effusions were no sooner brought to a close than forgotten; and no one knew any thing of them but myself; for I had not yet attained the art of writing, and I could compose only when alone." That passion for linguistic expression—that rapture in fitting thought and emotion to words, by which nature seems to point out the born literary man, was already characteristic of Miller.

Following this child, whose very amusements are intellectual, into the school-room, we perceive that he is in a fair way to earn the reputation of dunce. Accustomed to learn by the eye, to stray down vistas of picture constructed for him by his imagination from the materials of his favorite books, he takes no interest in the mechanical operations of memory. The Latin rudiments in particular prove incapable of imaginative illumination. The sluggard schoolmaster never tells him that if he be but brave enough to grope for a time as through a dark passage, the classic wonder-land will open on his sight. An intelligent and spirited boy to work heartily at his tasks, must know what he is about, and have some conception of the guerdon which is to reward his toil. It never occurs to this schoolmaster that *he* may be the dunce, stolidly inapprehensive of the requirements of the case, and of the nature of his duty towards his

peculiar pupil. He takes the more obvious, comfortable, and human-natural course of deciding that Hugh's uncles have overrated his abilities, and that he is a mere ordinary dullard.

Miller's trifling proved infectious. He had one day, on some impulse of the moment, taken to relating to the boy who sat next him, the adventures of Sir William Wallace. A group of fascinated listeners soon hung round the interesting dunce. To narratives from blind Harry succeeded tales from Cook and Anson; and when these were exhausted, imagination was called upon to supply the article in request. The improvising practice he had enjoyed in his solitary walks now stood him in good stead, and he regaled his auditors with

> boyish histories
> Of battle, bold adventure, dungeon, wreck,
> Flights, terrors, sudden rescues.

"In a short time"—these are his own words—"my narratives had charmed the very shadow of discipline out of the class." In his English reading-lessons he appeared to some advantage, the master contriving to make out that he could distinguish between good and bad in style; but on the whole, he looked upon school attendance as a mere curtailment of his freedom, made no progress whatever in spelling and parsing, and in Latin, failed utterly.

In some respects—always excepting those for which it was specially intended—the school was not amiss. In the company of one hundred and fifty boys and girls, there is likely to be not a little that will contribute to mental and physical development. From the windows, could be seen, at all hours, ships and boats entering or leaving the harbor; at certain seasons the turf before the door glittered with myriads of herrings, the air became alive with bustle of curing operations; a pig-slaughtering establishment was at hand, where Hugh, turning characteristically from the slaying processes, could look inquiringly into the mysteries of porcine anatomy; and there was a chance, at any moment, of taking part in a glorious expedition sent forth to exact, *arte vel Marte*, the tribute of peats which the boatmen of Ross, as they arrived with their cargoes, were bound to pay to the school. An annual cock-fight was celebrated by the boys and their teacher; but in this he took no more interest than in the killing of the pigs; the tenderness he had derived from his father forbade him.

In his tenth year, the spell cast over his imagination by the narratives of the sea-captains had been broken. He had read "The Adventures of Sir William Wallace," by the Scottish Homer of the fifteenth century, of whom we know only that his name was Harry, that he was blind, that he earned his bread by repeating his poetry in the laird's hall and by the farmer's ingle, and that he professed to base his narrative on a history of Wallace, written in Latin by his chaplain, named Blair.

It was owing doubtless to the entireness and intensity of his patriotic devotion to Scotland and to Wallace, that his book was for centuries "the Bible of the Scottish people," and that it profoundly affected the boyish imaginations of Robert Burns, of Walter Scott, and of Hugh Miller. The fiery patriotism of this book inspired those national songs of Burns, and those magical tones occurring at intervals in all his poems, which will thrill readers to their inmost hearts so long as love of country endures. Its effect on Hugh Miller was to make him a Scottish patriot to the finger-tips. Affection for his country was from that time a ruling passion in his breast, and his ideal of a great man was a great Scotchman.

No wise critic will dispute that this was an important and an auspicious advance in the development of the boy. He who, as a boy, is indifferent to his own country, will, as a man, be indifferent to all countries. Hugh Miller, we need not doubt, owed much of that home-bred vigor, that genial strength, racy picturesqueness, and idiomatic pith which characterize his writings, to the early influence of Blind Harry.

Meanwhile he has been learning to read in a book whose lessons he could not outgrow, and whose illuminated lettering, of gem and flower and shell, has a charm for eye and heart, which had been absent from the Latin Rudiments. Upon the sands at ebb-tide, when the slant sun-light strikes ruddy from the west, the boy may be seen trotting by the side of Uncle Sandy, hunting for a lumpfish in the weeded pools, hanging in ecstasy over the sea-mosses, that glance through the lucid wave with more delicate splendor of rubied flush and scarlet gleam, of golden tress and silken fringe, of tender pearl and beaming silver, than graced the jeweled princesses of his fairy-books, and drinking in with eager attention every word uttered by his guide. We can picture him a kilted urchin, probably barefooted, with bright auburn hair, glowing blue eyes, cheek touched with the crimson of health, the face marked by quiet thoughtfulness and incipient power. His uncles were doubtless perplexed with their nephew; but, on the whole, despite the head-shaking of the school-master, and Hugh's manifest lack of interest in the Rudiments, they could not believe that the boy who, since the dawn of his faculties, had been a good listener, a voracious reader, a quick and intelligent observer, was the dunce his pedagogue pronounced him.

MILLER'S ADVENTURE IN THE DOOCOT CAVE.

He was twelve years old when the notable adventure of the Doocot Cave afforded him the subject of his first verses. The incident, slight in itself, happens to possess extraordinary interest in a biographical point of view. An event which impresses the mind strongly

in boyhood becomes entwined, as we proceed in our life-journey, with innumerable associations, and when at successive stages in our path we attempt to recall its precise circumstances, we fail to place them in their original bareness before the mind's eye. Suppose, then, that in endeavoring to know a man, to realize what, in the stages of his growth, he was, and what he could do, we met with successive accounts from his pen of one and the same incident,—would we not feel that a curiously instructive opportunity was afforded us of taking the observations necessary for our purpose? How glad would the biographer of a great painter be to light upon a series of pictures from his hand, the subject the same in all, but the occasions when they were painted falling at different dates in his history, from the morning of life until its afternoon! It is this advantage we possess in connection with Hugh Miller's boyish adventure in the Doocot Cave. There exist at least four accounts of the incident drawn up by himself,—four successive paintings of the same scene by the boy, the strippling, the man of twenty-seven, and the man of fifty.

The first is that referred to in the "Schools and School-masters," as executed in "enormously bad verse" a day or two after the occurrence. The copy before me is the identical one which excited the admiring wonder of Miss Bond, mistress of the Cromarty Boarding School. Attached to it is that pictorial representation of the scene which Miller describes as consisting of "horrid crags of burnt umber, perforated by yawning caverns of India ink, and crested by a dense forest of sap-green." You can see what is intended; the sea is below the cavern, and the sward and wood are above; but the whole is not superior to the ordinary daubing of child-artists. The verses exhibit internal evidence of having been written within a day or two of the event they record. The agony of distress and terror experienced by the boy of twelve when he and his companion—a lad still younger—found themselves, as night came on, with the sea before, impassible rocks on either hand, and a dark cavern behind,—this, and their contrasted rapture when the boats hailed them at midnight, supersede all reflection on the beauties of the landscape or the wonders of the cave. The grammar and spelling are about as bad as possible. Here are the first two lines:

> "When I to you unfolds my simple tale,
> And paints the horrors of a rocky vail."

He forgets to say what will happen when the dreadful revelation takes place, and strikes presently into description of the cave. We need not retain the childish misspelling:

> "There stands a cavern on the sea-beat shore,
> Which stood for ages since the days of yore,
> Whose open mouth stands forth awfully wide,
> And oft takes in the roaring, swelling tide.
> Out through the cavern water oozes fast,
> Which ends in nothing but white stones at last.

Two boys, the author one, away did stray,
Being on a beauteous and a sunshine day."

The contemptuous "nothing but white stones" hardly betrays the future geologist, and the *naïveté* of "the author one" is charming. The last three stanzas relate, in very flat prose fitted with rhyme, that the boys went to the cavern "for some stones," found that the water had filled in round them, tried to get out but could not, were doubly pained when "the night came on, down poured the heavy rain," and "ran so very fast" to the boats when they came to rescue them. Nothing here but the sternest historical realism. Fancy has not gilded the clouds, nor enthusiasm softened the colors; the fact stands simply out as an experience of unromantic misery.

For several years this version seems to have contented Hugh, the revision it underwent extending only to verbal alterations. The lad of nineteen, however, discards the whole, and produces a more polished and melodious ditty. The friend who shared the adventure is dismissed, and the interest centers in the "author," or, as he is now more poetically styled, "the Muses' youngest child," or, with a touch of remorseful pathos, "the Muses' rude, untoward child." He has learned to sketch in Scott's lighter manner, and there is something of gracefulness and vivacity in his handling:

"Well may fond memory love to trace
The semblance of that lonely place;
Much may she joy to picture fair
Each cliff that frowns in darkness there;
For when alone in youth I strayed
To haunted cave or forest glade,
Each rock, each lonely dell, I knew,
Where flow'rets bloomed, or berries grew;
Knew where, to shelf of whitened rock,
At eve the sable cormorants flock;
Could point the little arm to where
Deep the wild fox had dug his lair;
Had marked with curious eye the cell
Where the rock-pigeon loved to dwell;
Had watched the seal with silent ken,
And, venturous, stormed the badger's den."

In the following lines there seems to be an echo from Byron's tales:

"Oft had our poet wished to brave
The giddy height and foaming wave
That wildly dashed and darkly frowned
The Doocot's yawning caves around.
For many a tale of wondrous kind
With wild impatience fired his mind;
Tales of dark caves, where never ray
Of summer's sun was seen to play;
Tales of a spring whose ceaseless wave
Nor gurgling sound nor murmur gave,
But like that queen who, in her pride,
Latona's ruthless twins defied,

To meltless marble, as it flows
Through stiffening moss and lichens, grows;
Before he deem these marvels true
The caves must meet his curious view."

Considerable progress here from the "water oozing fast," and "nothing but white stones," of the first edition. In that performance the arrival of the boat had been emphatically chronicled, "the author" dwelling with manifest satisfaction on the event. It would not, however, have been poetical enough for "the Muses' youngest child" to be taken off at midnight by mere terrestrial fishermen. In the new edition, accordingly, he remains until "Aurora" makes her appearance:

"And clear and calm the billow rolled,
With shade of green and crest of gold."

The second of these lines is finely colored.

In the vigor of early manhood, Miller described the adventure of the cave in a letter to a former teacher. The picture has become full in detail, and glowing in tint: "The cave proved a mine of wonders. We found it of great depth, and, when at its farthest extremity, the sea and opposite land appeared to us as they would if viewed through the tube of a telescope. We discovered that its sides and roof were crusted over with a white stone, resembling marble, and that it contained a petrifying spring. The pigeons, which we disturbed, were whizzing by us through the gloom, reminding us of hags of our story books, when on their night voyage through the air. A shoal of porpoises were tempesting the water in their unwieldy gambols, scarcely a hundred yards from the cavern's mouth, and a flock of sea-gulls were screaming around them, like harpies around the viands of the Trojan. To add to the interest of the place, we had learned from tradition that, *in the lang syne*, this cave had furnished Wallace with a hiding-place, and that more recently it had been haunted by smugglers. In the midst of our engagements, however, the evening began to darken, and we discovered that our very fine cave was neither more nor less than a prison. We attempted climbing round, but in vain; for the shelf from whence we had leaped was unattainable, and there was no other path. 'What will my mother think?' said the poor little fellow, whom I had brought into this predicament, as he burst into tears. 'I would care nothing for myself,—but my mother.' The appeal was powerful, and, had he not cried, I probably would; but the sight of his tears roused my pride, and, with a feeling which Rochefoucault would have at once recognized as springing from the master principle, I attempted to comfort him; and for the time completely forgot my own sorrow in exulting, with all due sympathy, over his. Night came on both dark and rainy, and we lay down together in a corner of the cave. A few weeks prior, the corpse of a fisherman, who had been drowned early in the preceding winter, had been found on the beach below. It was much

gashed by the sharp rocks, and the head was beaten to pieces. I had seen it at the time it was carried through the streets of Cromarty to the church, where, in this part of the country, the bodies of drowned persons are commonly put until the coffin and grave be prepared; and all this night long, sleeping or waking, the image of this corpse was continually before me. As often as I slumbered, a mangled, headless thing would come stalking into the cave and attempt striking me, when I would awaken with a start, cling to my companion, and hide my face in his breast. About one o'clock in the morning we were relieved by two boats, which our friends, who had spent the early part of the night in searching for us in the woods above, had fitted out to try along the shore for our bodies; they having at length concluded that we had fallen over the cliffs, and were killed."

Last of all, written when he was turned of fifty, we have the narrative of the occurrence as it appears in the "Schools and Schoolmasters." The passage, too long to quote in its completeness, is one of the most rich and elaborate in the works of Hugh Miller. The "nothing but white stones" of the first description, and the "meltless marble" of the second, have become the blended poetry and science of the following sentences: "There were little pools at the side of the cave, where we could see the work of congelation going on, as at the commencement of the October frost, when the cold north wind ruffles, and but barely ruffles, the surface of some mountain lochan or sluggish mountain stream, and shows the newly formed needles of ice, projecting mole-like from the shores into the water. So rapid was the course of deposition, that there were cases in which the sides of the hollows seemed growing almost in proportion as the water rose in them; the springs, lipping over, deposited their minute crystals on the edges; and the reservoirs deepened and became more capacious as their mounds were built up by this curious masonry." The idea of the telescope, which occurs first in the third description, is finely worked out in the fourth: "The long, telescopic prospect of the sparkling sea, as viewed from the inner extremity of the cavern, while all around was dark as midnight; the sudden gleam of the seagull, seen for a moment from the recess, as it flitted past in the sunshine; the black, heaving bulk of the grampus, as it threw up its slender jets of spray, and then, turning downwards, displayed its glossy back and vast angular fin; even the pigeons, as they shot whizzing by, one moment scarce visible in the gloom, the next radiant in the light,—all acquired a new interest, from the peculiarity of the setting in which we saw them. They formed a series of sun-gilt vignettes, framed in jet; and it was long ere we tired of seeing and admiring in them much of the strange and the beautiful."

The scenery of the heavens is hardly referred to in the first sketch. The fact of a rain-storm having aggravated the horrors of the situation, is mentioned; but the boy thinks of nothing except the addi-

tional pain it occasioned. When Hugh Miller had watched the sunsets of forty other summers, he "put in the sky" of his picture thus: "The sun had sunk behind the precipices, and all was gloom along their bases, and double gloom in their caves; but their rugged brows still caught the red glare of evening. The flush rose higher and higher, chased by the shadows; and then, after lingering for a moment on their crests of honeysuckle and juniper, passed away, and the whole became somber and gray. The sea-gull sprang upward from where he had floated on the ripple, and hied him slowly away to his lodge in his deep-sea stack; the dusky cormorant flitted past, with heavier and more frequent stroke, to his whitened shelf high on the precipice; the pigeons came whizzing downwards from the uplands and the opposite land, and disappeared amid the gloom of their caves; every creature that had wings made use of them in speeding homewards; but neither my companion nor myself had any, and there was no possibility of getting home without them. . . . . For the last few hours, mountainous piles of clouds had been rising dark and stormy in the sea-mouth; they had flared portentously in the setting sun, and had worn, with the decline of evening, almost every meteoric tint of anger, from fiery red to a somber, thunderous brown, and from somber brown to doleful black."

All these things were seen by Hugh Miller, as he stood on the threshold of the cave, or looked out from within through its rock-hewn telescope; but it was not the Hugh Miller of twelve years who saw them; it was the Hugh Miller of fifty who was transported by imagination to stand again in the entrance of the cave, or gaze again from its interior, and to see "what the eye brought with it the means of seeing." It was as if Turner, at fifty, had taken it into his head to paint the first sunset on which he had looked with boyish delight, and in so doing, had thrown upon the canvas the science and subtlety of a life spent in the observation of nature.

FIRST GLIMPSE OF THE SUTHERLAND HIGHLANDS—EXPERIMENTS IN SELF-AMUSEMENT—THE REBELLIOUS SCHOOL-BOY.

Soon after the occurrence which has detained us so long, the boy proceeded on a visit to certain relatives in the Highlands of Sutherland; a visit which was repeated in two successive autumns. His faculties were thus exercised by new scenes and new acquaintances; he listened to discussions on the poems of Ossian, and began secretly to think it probable that the famed Celtic bard belonged to the ancient clan, MacPherson; he added to the picture-gallery of his imagination a few fresh subjects—long, low valleys in tender blue, enlivened by green-wooded knolls, and delicately draped with wreaths of morning mist; reaches of quiet lake, with gray ruins nodding on slim promontories; waterfalls glancing by the silvery boles of birch-

trees, and sending up a steamy spray to fall gem-like on their drooping foliage; and he laid the foundation of that thorough comprehension of the character of the Highlanders, and of the condition of the Highlands, which made him in after-life one of the best authorities on all Highland questions.

Whether in Sutherland or at home, his mind was constantly active, constantly growing. His school-fellows wondered and derided as they beheld him launching on the horse-pond a succession of mysterious vessels constructed from the descriptions of Anson, Cook, and other voyagers. In the "Schools and School-masters" we hear of one of these, a proa, similar to those used by the Ladrone islanders, but this was no more than a single specimen of his ship-carpentering. "I used," he wrote to Baird, "to keep in exercise the risible faculties of all the mimic navigators of the pond, with slim, fish-like boats of bark, like those of the North American Indians, awkward, high-pooped galleys, like those I had seen in an old edition of Dryden's "Virgil," two-keeled vessels, like the double canoes of Otaheite, and wall-sided half-vessels, like the proas of the Ladrone islands. Nor could I," he proceeds, "derive, like my companions, any pleasure from the merely mechanical operation of plain sailing. I had a story connected with every voyage, and every day had its history of expeditions of discovery, and cases of mutiny and shipwreck." Navigation gave place to chemistry, but his experiments were "wofully unfortunate." Then he tried painting; but, as the art seems to have required boiling of oil, and as he boiled it so effectually that the flame found its way out at the chimney-top, and a "sublime fire-scene," threatening to become more sublime than agreeable, was the result, the brush was thrown aside. The founding of leaden images was next attempted; but one of the busts being waggishly like a neighbor, and troubles arising in consequence, this, also, was abandoned. "My ingenuity gained me such a reprimand, that I flung my casts into the fire." He now took a turn at "mosaic work," and this was followed by attempts to fashion watch-seals. "When I had worn the points of my fingers with cutting and polishing until the blood appeared, I forsook the grindstone." He fell in with a book on natural magic, palmistry, and astrology, and for a time went wool-gathering upon that particular range of the mountains of vanity. He became a sufficient adept in palmistry to make out, from a perusal of the mystic characters inscribed on the palm of his left hand, that his life was to be strange and eventful, that he was to become a revolutionary leader, and that he was to die like Wallace, on the scaffold. Verse-writing, prose-writing, and "a third sort of composition which imitated the style of MacPherson's 'Ossian,'" were engaged in, probably with fitfulness, but with passionate enjoyment.

His principal amusement at this period, however, was one of which he has singularly enough omitted mention in the "Schools and School-masters." He drew the map of a country in the sand, and,

having collected quantities of variously colored shells from the beach, arranged them so as to represent its inhabitants. Appointing himself king of the miniature community, he designed its towns, roads, canals, harbors, and other public works. He ruled his dominions by every different form of government with which he was acquainted, and attacked or defended them by every stratagem of war with which books or his uncles had made him familiar.

In his fourteenth year, all other amusements yielded to that of heading a band of his school-fellows, with whom, in the harvest vacation, he spent every day, from dawn to sunset, in or about a deep cavern, penetrating one of the steepest precipices which skirt the southern base of the hill of Cromarty. One of the brotherhood brought a pot, another a pitcher; the shore supplied shell-fish, the woods, fuel; the fields, potatoes, peas, and beans; and so they went a-gypsying the long summer day.

"The time not employed in cooking," says Miller in his letter to Principal Baird, "or in procuring victuals, we spent in acting little dramatic pieces, of which I sketched out the several plans, leaving the dialogue to be supplied by the actors. Robbers, buccaneers, outlaws of every description, were the heroes of these dramas. They frequently, despite of my arrangements to the contrary, terminated in skirmishes of a rather tragic cast, in which, with our spears of elder and swords of hazel, we exchanged pretty severe blows. We were sometimes engaged, too, in conflicts with other boys, in which, as became a leader, I distinguished myself by a cool, yet desperate courage. Nor was I entitled to the rank I held from only the abilities which I displayed in framing plays and in fighting. I swam, climbed, leaped, and wrestled better than any other lad of my years and inches in the place."

With schooling, in the mean time, it fared as ill as possible. Hugh had made up his mind not to learn, and he could neither be coaxed nor beaten out of his determination. Sooth to say, he had become a self-willed, turbulent lad, and the haziness of conception on the subject of *meum* and *tuum*, indicated by potato-pilfering and orchard-robbing, was not the darkest shade which we have to bring into harmony at this period, as we best may, with the idyllic brightness of his boyhood. In the letter to Principal Baird and elsewhere, he mentions a fact or two which he omits from the "Schools and School-masters," but which can not be withheld consistently with biographic veracity.

Setting his school-master, his uncles, and his mother at defiance, he played truant three weeks out of four, and cast off every trammel of authority. Distressed and alarmed, his relatives tried force. The stubborn will and intrepid spirit which he had inherited from his father were roused to fiercer opposition. He carried about with him a long clasp-knife, with which to repel any attack that might be made upon him by his uncles. They next had recourse to expostulation.

They represented to him, with affectionate earnestness, that he was losing his sole chance of escaping a life of manual labor, and urged that the possession of faculties whose right use would enable him to rise in life, made it the more disgraceful in him to sink actually below his father's station. The arguments were unanswerable, and Hugh seems to have made no attempt to answer them, but he held his own course. His mother, profoundly afflicted by the seeming disappointment of her hopes, gave him up altogether, and bestowed her affection on his two sisters. In the winter of 1816, both the little girls died. Hugh loved them, and was deeply affected when the music of their voices, which had cheered the cottage so long, passed suddenly away forever. But keener far was the pang which struck to his heart when he overheard his mother remarking how different would her condition have been, had it pleased Heaven to take her son and leave one of her daughters. "It was bitter for me," he says, "to think, and yet I could not think otherwise, that she had cause of sorrow, both for those whom she had lost, and for him who survived; and I would willingly have laid down my life, could the sacrifice have restored to her one of my sisters." A noble impulse, and sincere, but an impulse merely; in a few weeks he was again at the head of his band. "A particular way of thinking," he remarks, "a peculiar course of reading, a singular train of oral narration, had concurred from the period at which I first thought, read, or listened, in giving my character the impress it then bore, and it was not in the power of detached accident or effort to effect a change." He had, at this time, cast all religion to the winds. We have it explicitly in his own words, that he became an atheist. "A boy-atheist," he writes to Mr. John Swanson in 1828, "is surely an uncommon character. I was one in reality; for, possessed of a strong memory, which my uncles and an early taste for reading had stored with religious sentiments and stories of religious men, I was compelled, for the sake of peace, either to do that which was right; or, by denying the truth of the Bible, to see every action, good and bad, on the same level." His atheism, however, was a mere affectation—a drossy scum on the surface of his nature, with no real basis either in head or in heart. It was one form of his rebelliousness at the time. He was obstinately willful and irreligious, and he thought it bold and fine, and also logically consistent, to call himself an atheist.

Three school-masters in succession had an opportunity of exercising their talents upon Hugh, and in each case the failure was signal. His schooling ended when he was fifteen in a pitched battle with the dominie. His gains from ten years of nominal education were small. Penmanship, clear and strong, a smattering of arithmetic, spelling, of which a boy of ten might be ashamed, syntax, which joined substantives in the singular to verbs in the plural, and *vice versâ*, were his scholastic acquirements. His miscellaneous reading, however, had been extensive; he had stored up a vast amount of information in a

capacious and retentive memory; he composed freely in prose and verse, though there is hardly any sign of vitality in his writings of this period, except the delight they evince in the work of composition. Before the close of the day on which his conflict with the schoolmaster took place, he had avenged himself in a copy of satirical verses, which, to say the least, show a great advance, in flexibility and in command of language, on those in which he first recorded the adventure in the Doocot Cave. As given in "Schools and Schoolmasters," they are much improved, the epithets freshened and burnished, and the best line in the whole,

"Nature's born fop, a saint by art,"

added. I find the lines in the "Village Observer," a manuscript magazine, in Miller's boyish handwriting, dated February, 1820.

Such was Hugh Miller at the time he left school. A rugged, proud, and stiff-necked lad, impossible to drive, and difficult to lead, his character already marked with strong lines, and developing from within or through self-chosen influences. "I saw," said Baxter, of Cromwell, "that what he learned must be from himself;" and the observation might already have been made of Hugh Miller. To his friends he was a perplexity and offense; to his uncles, in particular, who knew him too well, and were too sagacious to accept the off-hand theory of his school-masters, that he was merely a stupid and bad boy, he must have seemed a mass of contradictions. Intellectual in his wildest play, fond of books, and capable of discerning excellence from its counterfeits in thought and style, passionately addicted to the observation of nature, and forgetting no fact he once ascertained, how could he be dull in the ordinary sense? If, again, capacity to influence one's fellows was a test of power, could it be said that he who was undisputed sovereign of the boys of the place was the stupidest of them all? A dunce who from childhood had entertained his companions with tales of his own invention, who fitted his play-fellows with dramatic parts by way of pastime, who was never weary when his pen was in his hand, who possessed more literary information than any one twice his age in Cromarty, was a phenomenon new to the experience of Uncle James and Uncle Sandy. It was a puzzle for them, and it is something of a puzzle for us.

Not a few—among them men of the highest eminence as thinkers and writers—will decide with impatient emphasis that Hugh's rebellion against the tyranny of grammar was the genial assertion of his native force, the bursting of the flower-pot by the oak sapling, the most propitious thing which could have befallen him. There is much to be said on this side of the question. The boy who was dux of the school in Cromarty when Hugh Miller was dunce,—the model boy, who was the delight of the school-master, and who carried off the highest prizes when he went to college,—the boy whom the story books designate for a Lord Mayor's coach and a handsome fortune,—

became a respectable and useful minister of the Church of Scotland, and would probably never have been heard of beyond the circle of his parishioners, but for the circumstance of his having been mentioned in the works of his friend, the dunce. The name of the dux has been touched by the pen of the dunce, and is likely to live as long as the English language. By taking the bit into his teeth, leaping the fences, and scouring the plain at his own wild will, Hugh Miller obtained that freedom for his faculties which is necessary to all vigorous growth, to all beauty and capricious grace of movement. Had he received the technical training of a college professor, would college professors have said that they would give their hand from their wrist for the *curiosa felicitas* of his style? Take young creatures, colts, or lambs, mew them up, feed and fodder them on the most approved scientific principles,—you will have them sleek and fat, but will there be buoyancy or elastic strength in their limbs? will there be the light of health and joy in their eyes? will not the "poor things," like Tennyson's hot-house flowers, "look unhappy?" The law of freedom applies to all life, human as well as animal, and the finer and fresher the mental qualities, the greater is the risk that constraint will benumb or pervert them. The grand thing to be secured is mental force, and it is possible that laborious effort to attain skill in the expression of force may draw fatally on the original force itself. The faculties, like over-drilled soldiers, may have no strength left to play their part in life's battle. It is a Shakespearean opinion that

> "Universal plodding prisons up
> The nimble spirits in the arteries;
> As motion and long-during action tires
> The sinewy vigor of the traveler."

The worst possible result of school discipline is to take the edge from that exultant ardor with which a strong youth thinks of work, for mind or for body, as the supreme of pleasures. Hugh Miller's freedom was not unredeemed trifling; it was his native force developing in its own way and seeking its own nourishment. If he turned from the Latin Rudiments, he found a literature on which he never tired to expatiate,—a literature whose teaching he accepted with enthusiasm; a literature which acquainted him with foreign lands, and caused him to thrill at the deeds of brave men; a literature whose inmost spirit he vitally assimilated and made his own. If attention to his grammatical task in the dingy school-room pained him, his powers were concentrated in highest action when he accompanied Uncle Sandy in his researches on the shore at ebb-tide, or when, in solitary rambles, he looked carefully, constantly, lovingly into the face of nature. Even in those doings with his brethren of the cave, which seemed to have occasioned his relatives most alarm, he was acquiring habits of self-possession, courage, fidelity, reticence, which are not always imparted by artificial training.

And let us not forget that stubbornness of purpose, inflexibility of will, the unpardonable sin in the eyes of most pedagogues, is after all the indispensable basis of character for any man who will do much. Acquire it as he may, the ability to go forward in the path he has chosen, to face the pelting shower and the scorching sun, to do wholly, heartily, inflexibly, what he deliberately wills to do, is of sovereign importance for a man. *Quicquid vult valde vult*,—this is the diploma of masterhood in nature's university; "unstable as water, thou shalt not excel,"—this is the hopeless doom. "I sowed flower-seed," wrote John Sterling, respecting his management of his garden in boyhood, "and then turned up the ground again and planted potatoes, and then rooted out the potatoes to insert acorns and apple-pips, and at last, as may be supposed, reaped neither roses, nor potatoes, nor oak-trees, nor apples." The words are an epitome of Sterling's biography. Hugh Miller, even in boyhood, had a purpose, and held to it, firmly resolved that he would not have his limbs straightened on the Procrustean bed prepared for him, conscious that he was neither dunce nor reprobate, but growing in his own way.

It must be carefully noted that the character always remained sound in the vital parts. Of meanness, untruthfulness, cruelty, avarice, he showed no trace. Had his sensual passions been vehement as those of Burns or Mirabeau, the probability is that he would have fallen into debauchery; but his wildest passion was a passion for freedom; his dissipation was to wander in the wood or by the wave. Neither morally nor intellectually was he, at any time, dissolute.

And yet it is impossible to hide from ourselves that there is another side to all this. It is difficult to believe that insubordination, turbulence, habitual neglect of tasks, with which a sentiment of duty is more or less associated, can be other than disadvantageous to the mind. To check the lawlessness natural to man; to break self-will to the yoke; to change the faculties from a confused barbarian herd or horde into a disciplined or exercised company must ever be an essential part of the training of youth. Educated human nature is more natural than uneducated. Shakespeare says again:

> "Nature is made better by no mean
> But nature makes that mean; so, o'er that art,
> Which, you say, adds to nature, is an art
> That nature makes."

Does not this throw us back on the reflection that education of the highest kind, based on nature, guided by nature, yet raising nature to heights otherwise unattainable, is not to be easily attained? In every case where an original mind is concerned, education is too subtle a process, requiring too intimate and individual a communion of soul with soul, to be managed by the rough, common methods. A boy of genius would require a teacher of genius, one whose perceptions were so keen, whose sympathies were so fine and true, that he

could understand the exceptional mind, obey its monitions as he led it on, apply to it a constraint which would be felt as gentleness, and a gentleness which would tell as constraint. Had Hugh Miller found such a teacher, the advantage to himself and the world might doubtless have been great. He had capacities in him for consummate scholarship, an exact and tenacious memory, great attention, great application, true taste, and clear judgment. Learning could never with him have been pedantry; and it is indisputable, that the man who can converse with the ancients in their own tongues commands a wider intellectual horizon than the man who knows only his native language. One can not help wishing that Hugh Miller had seen Homer himself lead out Achilles to poise a javelin, or had perceived how different a person is the brawney, broad-shouldered, highly unrhetorical Ulysses of the "Odyssey," from the Ulysses whom Pope taught to look and speak "in a manner worthy of the times of civilization." Had Hugh Miller's father survived, his shrewd sense and peremptory authority might have given a new color to the schooling of the boy; and, without sacrificing his freedom, Hugh might have taken enough along with him to go to college. Once at a university, the ambition of scholarship would have laid hold on him, and with genius unimpaired and materials extended, he might, in the first bloom of his manhood, have taken his place among the foremost intellectual workers of his time.

There is another consideration which lends a melancholy emphasis to these regrets. Hugh Miller came of a long-lived, strong-boned race, and we have learned from himself that he was the most athletic boy of his years in Cromarty. Had he proceeded to a university, he would have avoided those fifteen years in the quarry and the hewing-shed, during which his robust constitution was shaken, and the seeds of ineradicable disease were sown in his frame. In that case, the tear and wear of the severest of the intellectual professions, journalism, though combined with unremitting attention to science, might have failed to prevent his attaining a green old age. In his letter to Baird, he refers to the obscurity and hardship of his life as a mason, as "punishment for his early carelessness." But why follow these speculations further, or launch into the vainest and vaguest of all philosophies, the plilosophy of what might have been? By natural endowment and the action of circumstances,—in one word, by the will of God,—Miller was fitted for the work appointed him, and this is all we require to know or can know.

WIDOWED MOTHER MARRIES—MILLER A BOY-EDITOR—A LAD OF HIS OWN WILL—BECOMES APPRENTICE—HARDSHIPS—ALLEVIATIONS.

Boy-life, with its freshness of faculty, its exuberance of delights, its opulence of wayward force, lies behind Hugh Miller. In the

autumn of 1819, his mother, after a widowhood of fourteen years, accepts a second husband, and he removes with her to the house of his step-father. "I had no particular objections to the match," he writes to a friend a few years later, "but you may be certain that it gave me much disgust at the time." It compels him to realize the fact that the world has changed for him, and that duty now demands that play shall cease and work begin. Half a year, however, glides away pleasantly enough—his own expression is, "very agreeably"—in the house of his step-father. He still continues those sportings with literature which have from infancy been among his choicest enjoyments. I have before me Nos. I., II., and III. of a tiny magazine, written in Miller's hand, and entitled, "The Village Observer, or Monthly MSS." They are dated January, February, March, 1820. Hugh is the editor and principal contributor. It is in February of this year that he enters on his apprenticeship, and the March number closes the series. The pen gives place to the hammer—for a time.

These "Village Observers" are absolutely authentic documents of Miller's history at this time, and enable us to realize the circumstances of his life before any tint of fancy, or association from the pursuits of a subsequent period, had softened their harsher features. In the three numbers there is not the remotest allusion to his apprenticeship. This may be imputed to the disagreeableness of the subject; but it is somewhat remarkable that place is not found for a brief description of those rare and beautiful birds discovered by him in the quarry on the evening of his first day of labor, and delineated with enthusiastic minuteness in his "Old Red Sandstone." The one was a goldfinch, —very uncommon in the Highlands of Scotland,—with "hood of vermilion, and wings inlaid with gold;" the other, a bird of the woodpecker tribe, "variegated with light blue and a grayish yellow." Neither does Hugh, in the capacity of village observer, give us, in his March number for 1820, any hint of that "exquisite pleasure" which, as we are told in the "Old Red Sandstone," he derived from contemplating the adjacent landscape when resting, on the second day, from his toil at the hour of noon. "All the workmen," he says in that book, "rested at midday, and I went to enjoy my half hour alone on a mossy knoll in the neighboring wood, which commands through the trees a wide prospect of the bay and the opposite shore. There was not a wrinkle on the water, nor a cloud in the sky, and the branches were as moveless in the calm as if they had been traced on canvas. From a wooded promontory, that stretched half-way across the frith, there ascended a thin column of smoke. It rose straight as the line of a plummet for more than a thousand yards, and then, on reaching a thinner stratum of air, spread out equally on every side, like the foliage of a stately tree. Ben Wyvis rose to the west, white with the yet unwasted snows of winter, and as sharply defined in the clear atmosphere as if all its sunny slopes and blue retiring hollows had been chiseled in marble. They reminded me of the

pretty French story, in which an old artist is described as tasking the ingenuity of his future son-in law, by giving him, as a subject for his pencil, a flower-piece, composed of only white flowers, of which the one-half were to bear their proper color, the other half a deep purple hue, and yet all be perfectly natural; and how the young man resolved the riddle and gained his mistress by introducing a transparent purple vase into the picture, and making the light pass through it on the flowers that were drooping over the edge. I returned to the quarry, convinced that a very exquisite pleasure may be a very cheap one, and that the busiest employments may afford leisure enough to enjoy it." This is beautiful writing and excellent philosophy; but there is not a word in any degree resembling it, whether descriptive or philosophical, in the "Monthly MSS.," edited by Hugh Miller at the time. Nor is mention made of the ripple-marked sandstone, on beholding which, on the same day, he "felt as completely at fault as Robinson Crusoe did on his discovering the print of the man's foot on the sand."

What is, perhaps, still more surprising, there is a similar absence of reference to ornithological, geological, or æsthetic alleviations of his early toil in the account of this period, written by him ten years subsequently for Principal Baird. "My first six months of labor," he writes to Baird in 1829, "presented only a series of disasters. I was, at the time, of a slender make and weak constitution; and I soon found I was ill-fitted for such employments as the trundling of loaded wheelbarrows over a plank, or the raising of huge blocks of stone out of a quarry. My hands were soon fretted into large blisters, my breast became the seat of a dull, oppressive pain, and I was much distressed, after exertion more than usually violent, by an irregular motion of my heart. My spirits were almost always miserably low; and I was so wrapped up in a wretched, apathetic absence of mind, that I have wrought for whole hours together with scarcely a thought of what I was doing myself, and scarcely conscious of what others were doing around me."

Both these narratives may be strictly consistent with fact. In that case they afford a striking illustration of Miller's own remark, that two varying descriptions may be given by the same person of the same events, and yet both be veracious. He said nothing, in the earlier documents, of the rare birds, the beautiful landscape, the ripple-marked stone, because it was not until afterwards that he regarded them as of importance. He mentally associated with his first years of labor feelings which belonged to a later time. He was an observer from infancy, and his observations gave him joy; his memory became stored with facts; but not until he studied geology did he apprehend that these facts had any scientific value. When geology took possession of Miller, the possession was complete. He thought, talked, wrote of geology; his leading articles, his discussions of political and religious questions, were full of it. From the boyish maga-

zines he edited, it is absent; from the poems which he composed in boyhood and youth, it is absent; in the letters which he wrote to his favorite associates, of which we have an uninterrupted series, beginning a year or two later than the time at which we have arrived, we look for it in vain; and in the narrative composed at the request of Baird, there is not one throb of scientific enthusiasm. It was, I believe, at a time much later than that of his apprenticeship that Hugh Miller, though his eye had always beamed with delight when it rested on an object of beauty, learned to take a geological interest in the ammonite, "graceful in its curves as those of the Ionic volute, and greatly more delicate in its sculpturing," or to read, hour after hour, with scientific curiosity, in the "marvelous library of the Scotch Lias."

Boys and girls are moralists and politicians before they care about science.

Perhaps the most significant trait which the last number of the "Village Observer" presents of Hugh is this from a "Journal of the Week:" "Wrote a moral essay upon the advantages of industry, but tore it in pieces on considering that its author was one of the most indolent personages on earth—did nothing, but still determined on reform."

Farewell, then, to the busy idleness of verse-making and magazine-editing. In the last days of February, Miller still has leisure to put together the number for March, but no other number follows. He binds himself verbally, but by no legal instrument, apprentice for three years to "old David Wright," stone-mason, brother-in-law of his mother. Old David was something of a character.

Miller's uncles, who had taken the right measure of his capacity, and who had loved and watched over him as a son, have done their utmost to oppose this decision. Their sure instinct tells them that the place of this recruit is not in the ranks; they have earnestly wished to see him enrolled among the brain-workers of the community; and, like all Scottish peasants of the old historic type, they regard the ministers of the Church of Christ as taking precedence of all others in the intellectual aristocracy. They have told him that if he will only return to his books, and prepare for college, their home and their savings will be at his command. They have tried to appeal to his pride and desire for advancement. Uncle James has gone the length of hinting with some bitterness that, if he has found books too hard for him, he may find labor harder still, and may turn from the latter with the same inconstancy with which he turned from the former. But Hugh, as James Wright knows and has said, is "a lad of his own will," and his mind is made up. As for his declinature of the clerical profession, he satisfies both himself and Uncle James on that head, by the consideration that he has no call to the sacred office. The feeling of independence, strong in Hugh Miller as in Robert Burns, rebels against the idea of his going to college, dependent on the bounty

of relatives. Strangely enough, too, that passion for literature, whether in the form of reading or of writing, which had marked him from his childhood as the predestined author, drove him to the quarry. The conception of a literary career founded upon a complete University education, and commencing with the instruments and furtherances which ages have accumulated, had not dawned upon his mind. Literature had been to him a coy maiden, radiant, fascinating, but free and light-winged as a forest bird, and he shrank from formal irreversible espousals. He has observed that "Cousin George," a mason, though hard-worked during several months in the year, has the months of winter to himself. This decides him in favor of the trade of mason. In winter and early spring he will return to his beloved Muse, to dally with her in a life-long courtship; or, if it is to end in marriage,—for the thought of rising by literature does lurk, deep hidden, in his heart,—she will take his hand as a beneficent princess takes that of a knightly though low-born suitor, and lift him at once to fame and fortune. Uncle James's remark on the probability of his failing at labor as he has failed at study, he takes note of; it may be pleasant to teach Uncle James that he can will to work as well as will to play, and that, though others have lost the mastership of him, he has not lost mastership of himself. Enough; he declares unalterably for stone and lime, and becomes apprentice to his uncle, old David Wright. The engagement is understood to be for three years. In the chill February morning of 1820, he takes his way to the quarry.

Relieved or not relieved by touches of romance, Hugh Miller's first season of labor proves to be one of sternest hardship, putting to the strain his whole faculty of endurance. The dark side is given in all his contemporary or nearly contemporary renderings of the subject; the lights in the picture come out only when it is seen through the vista of years. Still quite a boy, slender and loose-jointed, uninterrmitted toil presses hard on him both in mind and body. His spirits fail. He is constantly in pain, often prostrated by sickness. He shows at first no quickness or dexterity in acquiring his trade, and is the most awkward of the apprentices. Uncle David begins to be of opinion that this incomprehensible compound of genius and dunce is incapable of attaining the skill of an ordinary mechanic. The lad is sorely tempted to become a dram-drinker. We have two accounts of his triumph over this temptation, the one harshly realistic, of date 1829, the other more picturesque, dated 1853.

"It is probable," he writes, "that the want of money alone prevented me from indulging, at this period, in the low vice of dram-drinking." He thus describes the affair in "My Schools and School-masters:" "In laying down the foundation-stone of one of the larger houses built this year by Uncle David and his partner, the workmen had a royal 'founding-pint,' and two whole glasses of the whisky came to my share. A full-grown man would not have deemed a gill of usquebaugh an overdose, but it was considerably too

much for me; and when the party broke up, and I got home to my books, I found, as I opened the pages of a favorite author, the letters dancing before my eyes, and that I could no longer master the sense. I have the volume at present before me,—a small edition of the Essays of Bacon, a good deal worn at the corners by the friction of my pocket; for of Bacon I never tired. The condition into which I had brought myself was, I felt, one of degradation. I had sunk, by my own act, for the time, to a lower level of intelligence than that on which it was my privilege to be placed; and though the state could have been no very favorable one for forming a resolution, I in that hour determined that I should never again sacrifice my capacity of intellectual enjoyment to a drinking usage; and, with God's help, I was enabled to hold by the determination." It was, therefore, not "the want of money *alone*" which prevented him from becoming a tippler; but we may be permitted to think that this little circumstance was a valuable auxiliary to Bacon.

Soon, also, there came alleviations of his hardship more practical than those derived from geological discovery and admiration of Highland scenery. As he does not sink under exertion, his physical stamina gradually asserts itself, and makes labor a source of strength. It was a characteristic of Miller during life, that he progressed in any pursuit not by little and little, but by leaps. His master and fellow-workmen, who, during the first months of his apprenticeship, have regarded him as too awkward to learn his trade, are suddenly astonished to find him one of the most expert hewers in the squad. "So flattered was my vanity," he writes, "by the respect which they paid me on this account, and such satisfaction did I derive from emulating them in what they confessed the better department of their profession, that the coming winter, to which, a few weeks before, I had looked forward as good men do to the pleasures of another state of existence, was no longer an object of desire."

To throw down the tools, however, could not but be a relief, and the leisure of winter is hailed with satisfaction. After a pedestrian journey to Strath-Carron, in company with his cousin, George Munro, in the course of which he makes some observations, not of an important character, on an old Scotch forest of native pine, he returns to Cromarty. The education of toil has already done more for him than any previous education, and the unruly boy has become a thoughtful, docile young man.

EARLY FRIENDSHIPS — SWANSON, FINLAY, ROSS — PLEASURES OF THE IMAGINATION — TWO OF NATURE'S GENTLEMEN.

From his early boyhood Miller had given proof of the blended faithfulness and tenderness of his nature by the affection with which he clung to one or two chosen friends. His friendship with John Swanson,

him of the Doocot cave, already warm and confidential when Hugh was twelve and John ten, continued in freshness and intensity until the hour of Miller's death. Finlay, whom he describes as a gentle-spirited boy, who loved to share with him the solitude of the caves by moonlight, seems to have held the first place in his regard in the period immediately preceding his apprenticeship.

By far the most remarkable, however, of these early friends of Miller was William Ross. There are many memorials of Ross in Miller's papers, and I can perceive that the account given of him in the "Schools and School-masters" is not too highly colored. The child of parents crushed into the dust by poverty, his father half imbecile, his mother feeble in health and broken-spirited, his own energies depressed by perpetual sickness, he had received from capricious nature a mental organization of exquisite delicacy, enriched with fine and tender elements. Modest, gentle, affectionate; tremulously alive to the feelings and claims of others; depreciating every thing in himself, exalting every capacity and accomplishment of one he loved; unaffectedly religious, and unmoved by utmost calamity from simple faith in a divine care and a heavenly love,—William Ross was the very ideal of a bosom friend. There is a letter dated Nigg, 10th July, 1821, from Ross to Miller, which will serve to introduce him to the reader. He had just lost by death one of the very few who had been kind to him in his boyhood.

"Where, think you, have I sitten down to write you? In my grandmother's room, and before the very table at which I once used to read (in happier days) a chapter in the big old Bible, and sing a psalm every night and morning. I can not tell you how I feel. The remembrance of the innocence and happiness of the days that are gone has softened my heart, indifferent as it has become to the pure feelings of devotion. I have done reading just now the three last chapters of the Gospel of St. John, and with the history of the sufferings of our Savior I was never more affected. I feel my soul raised above the things of this world in the contemplation of the truly godlike patience with which, in his human nature, he bore the terrible evils which were inflicted on him, and his resignation to the will of his heavenly Father.

"Oh that I could fix the present mood, and render it permanent! What a world of happiness dwells in the bosom of the devout man; amid all the storms of adversity he has a fortress and a God. His hopes repose on that Providence who has the disposal of all events; not knowing himself what is good or evil of the things of this life, he does his duty, and trusts to his Father for the rest. How far different is God from man! If we ask His favor he will not withhold it. 'To the poor he is a friend, and he will not hide his face from the needy.' I find we must love Him before we can truly love one another. I see this love as the master-principle—as the purifier of the heart; it warms our affections to our friends, makes us grateful to our

benefactors, and forgiving to our enemies. Oh, my dear Miller, bear with me now as you have often done before! I am weak as a child.

"My mind is filled with recollections of the joys that are gone, and the dear sainted friend that has left me. I went to her house, but I did not see her waiting my approach, her feet did not sound in the passage as I entered the door; 'my dear Willie' was not heard on my unexpected appearance. The good hand that once nursed me was not stretched out with an air of tender affection towards me. I looked to the place where she used to sit, but she was not there; in her bodily shape I did not behold her, yet her image was before me, and all the good she did me was present in my view. What a vacancy is here! What a change has death made to me! But I must have done; the last light of evening is taking its leave. Good-by."

The difference between the character of Miller, who met every check and impulse with pugnacity, and that of Ross, whose gentleness was feminine, and who could not bear to be thought ill of even by those who acted to him meanly and unkindly, tended probably to cement their friendship. The proceedings of Ross on completing his apprenticeship, and commencing practice as a house-painter on his own account, illustrate, in a touching manner, his simplicity and kindliness. The master who had enjoyed his services for five years—and valuable services they were, for William's talent in his vocation was eminent—seems to have quite cast him off when his term expired. He writes to Miller:

"Want stared me in the face; and, having determined not to be a burden to any, I meant to leave, if I possibly could, the place; for, though I had no prospect of employment, I deemed it better to starve among strangers (if nothing else awaited me) than in this country. . . . . On the Tuesday after you had left me I waited on Mr. ——, and told him what I would do if he would trust me. He would not; and after so downright a refusal you can not imagine the perturbed state of my mind. What hurt me most was that he should have doubted my probity. I then went straight to Mr. ——, to see what he thought of me; for, after the first shock was over, I was indifferent to what I might meet with. He was not quite so direct with me, but what he said amounted to a refusal too. Before evening I had paid them both, which so reduced my slender finances that I could go nowhere, and here, without money or employment, I could not well stay. The friend who would have sympathized with me was gone; and perhaps 'twas better that he was. The way in which I have been treated could not but have hurt you.

"Now that you have my worst news, I will tell you better. Colonel G—— sent for me to *refresh* the walls of his dining-room, and gave me 5s. when I had done. Soon after, I saw Mr. ——, who asked me whether I was employed, and told me, on replying in the negative, that his brother-in-law, Mr. ——, had bought paint at London, and was looking out for some one to paint his house for him by the day.

I would do the work most readily, I said, but as my old master had thought of getting it for himself, I could not think of interfering. He assured me, however, that that was out of the question, as it was owing to the exorbitancy of my master's estimate that Mr. —— had procured the materials for himself. I accordingly went and settled with Mr. —— for the work at 3s. per day. This will make a sad change, I am afraid, in all I enjoyed of the favorable opinion of my master; but I can't help it."

Was there not a delicacy of honor in the reluctance of the lad, whom starvation actually stared in the face, to accept work which his old master had "thought of getting," such as is rarely met with in any rank of life? In a letter written shortly afterwards, we have this note of that master's conduct: "I came here to furnish brushes for the work, but my master would sell me none." Brushes, however, were obtained, and he proceeds: "I am happier in my mind than usual. There are glimpses of sunshine breaking out upon me, and a less troubled sky overhead. Oh, how grateful ought I to be to that bounteous Benefactor who knows our wants, and can and will supply them! I hardly know, my dear Miller, how to conclude. I trust I am grateful to *Him* for you too." It must have been a sweetly toned nature which unkindness so bitter did not provoke to one angry word, and which was so easily stimulated to childlike gladness and to pious gratitude. In the deep forest, one beam penetrates to the wounded bird, and it breaks on the instant into song.

Such was the young man with whom Miller spent the greater part of his time on being relieved from the labors of his first year of apprenticeship. He read his poems to Ross, and showed him his drawings. Hugh had formed a high estimate of both, and the undercurrent of critical severity which invariably accompanied his friend's applause, though not strong enough to damp his ardor, was useful in giving precision to his ideas of himself. Ross had penetration enough to discern that a certain imaginative glow, which threw out objects, as it were, in aerial perspective, and cast over them a pleasing light of fancy or association, belonged to Miller. In their walks in the wood or by the shore, he encouraged Hugh to cultivate literature, applauding "the wild vigor of his imagination," and hinting that his word-pictures of the moment revealed more of poetical genius than the formal productions either of his pencil or his pen.

Ross's advice to Miller on the whole was as follows: "Your drawings have but little merit, nor can I regard them even as works of promise; neither by any means do you write good verses. And why, do you think, do I tell you so? Only to direct your studies to their proper object. You draw ill, because nature never intended that you should do otherwise; whereas you write ill, only because you write seldom. You are possessed of talents which, with due culture, will enable you to attain no common command of the pen; for you are an original thinker, your mind is richly imbued with poetry, and,

though devoid of a musical ear, you have, from nature, something much better,—that perception of the harmonies of language which is essential to the formation of a good and elegant style." So far as I can judge, no critic could have more correctly estimated Miller's capacity at the time, or given him better advice.

A spectator, observing these lads, the one apprenticed to a mason, the other to a house-painter, would hardly have guessed the nature of their conversation. Had they been youths of aristocratic birth or university distinction, could their intercourse have been more completely that of *gentlemen?* We may note how steadily Hugh pushes forward what, without much conscious resolving on the subject, has become the purpose of his life,—self-culture. With quiet persistence, undistracted by the commencement of lifelong toil as a mason, he cherishes the ambition of maturing his powers of thought and expression. Attesting, also, the radical nobleness of his character, and the high tone of the society in which he had lived, this circumstance is to be noted,—that the ambition of making money never seized him. The big bells of Babylon dinning into all young ears, never more loudly than in our age, their invitations to make fortunes, had no persuasion for him. To extend the empire of his mind, to enrich and beautify the garden of his soul, this was what presented itself as a supreme object of ambition to our Scottish boy of eighteen, with a mallet in his hand.

CONON-SIDE—LIFE IN THE BARRACK—WANDERINGS IN THE WOODS—SCENERY OF CONON-SIDE—AT HOME AGAIN.

In the spring of 1821, Miller resumed his labors. In the latter end of May, his master had finished the work contracted for in the district of Cromarty, and, as no more contracts were to be had, was compelled to descend from the position of master and seek employment as journeyman. The apprentice he had taken at the same time with Miller seized the opportunity of regaining his freedom, and setting up as journeyman on his own account; and one might have thought that the willful, headstrong lad, who had set his uncles and his school-masters at defiance, would have followed this example. But Hugh was no longer the turbulent school-boy of sixteen, and among the qualities which had ripened in the wholesome atmosphere of labor was a profound sense of justice. He continued to serve old David Wright, and proceeded with him to the banks of the Conon.

He is now, for the first time, introduced to the barrack or bothy life of a squad of masons. A description of the barrack, and the scene it presented on his first becoming one of its inmates, occurs in his letter to Baird. "I followed," he writes, "the horde into their barrack. It consisted of one large apartment. Along the wall, and across one of the gables, there was a range of beds, rudely con-

structed of outside slab deals, and filled with straw, which bristled from beneath the blankets and from between the crevices of the frames in a manner much less neat than picturesque. At each bedside there were two chests, which served not only the purpose originally intended, but also for chairs and tables. Suspended by ropes from the rafters above, there hung, at the height of a man's head from the ground, several bags filled with oatmeal, which by this contrivance was secured from the rats, with which the place was infested. Along the gable furthest removed from the door there was a huge wood fire; above it there were hung several small pots, enveloped in smoke, which, for lack of proper vent, after filling the whole barrack, escaped by the door. Before the fire there was a row of stones, each of which supported an oaten cake. The inmates, who exceeded twenty, had disposed of themselves in every possible manner. Some were lounging in the beds, others were seated on the chests. Two of them were dancing on the floor to the whistling of a third. There was one employed in baking, another in making ready the bread. The chaos of sounds which reigned among them was much more complete than that which appalled their prototypes, the builders of Babel. There was the gabbling of Saxon, the sputtering of Gaelic, the humming of church music, the whistling of the musician, and the stamping of the dancers. Three of the pots on the fire began to boil together, and there was a cry for the cook. He came rushing forward, pushed the man engaged in baking from out his way with one hand, and drawing the seat from under the one employed in making ready the bread with the other, he began to shout out, so as to drown their united voices, for meal and salt. Both were brought him, and in a few minutes he had completed his task."

Wild companions, a wild lodging, and wild mode of life; nor can much bodily comfort be associated with the idea of a diet whose sole variation is from oatmeal in porridge to oatmeal in cakes; but Miller is not unhappy. He is now recognized as a good workman, and his frame is more capable of labor than in the previous season. His spirit is buoyant, and full of gay, hopeful humor; and his readiness to take and return a jest, together with his sprightliness and his obliging disposition, secure him the good-will of his companions. On the long summer evenings, when work is over, he can wander about the district, climbing its ridges of hill, exploring its ruins and natural curiosities, diving into the recesses of its woods, and following the course of its streams. He is still boy enough to enjoy the raspberries which grow in the woods, and the poetry of his nature finds aliment in the new and picturesque aspects of hill and plain which every eminence reveals to him.

The gentler aspects of the scenery near appear to have attracted Miller. "Strathpeffer," he wrote to Baird, "one of the finest valleys in this part of the country, lies within five miles of Conon-side. My walks occasionally extended to it; and I still retain a vividly-

pleasing recollection of its enchanting scenery, with the more pleasing features of the scenes through which I passed on my way to it.

But he was not exclusively engaged on these occasions in view-hunting. "I have not even yet," he adds, "summed up my evening amusements. They were not all poetical. The country round Conon-side abounds with wild fruit, and I feasted among the woods, during my long rambles, on gueens, rowans, raspberries, and blae-berries, with all the keenness of boyish appetite. The fruit furnished me with an ostensible object for my wanderings; and when complimented by a romantic young girl, who had derived her notions of character from the reading of romances, on that disposition which led me to seek my pleasures in solitude, I could remark in reply that I was not more fond of solitude than of raspberries."

It was late in the year when he returned to Cromarty. Nearly a month of winter had passed. Ross was now residing in the cottage of his parents, on the northern side of Cromarty Frith, and Miller lacked the stimulus of his literary sympathy. "What remained of the season," he wrote, "together with the greater part of the ensuing spring, was spent in profitless indolence. I neither wrote verses nor drew pictures, but wandered during the day through the fields and woods, and among the rocks of the hill of Cromarty; and my evenings were commonly spent either in the workshop of my Uncle James, where a few of the more intelligent mechanics of the place generally met, or in the company of a new acquaintance," the helpless cripple, described in the "Schools and School-masters" as "poor lame Danie," who, with his old mother, occupied "a damp, underground room." Miller formed a friendship with the suffering boy, and took delight in alleviating the tedium of his lingering illness.

RETURNS TO CONON-SIDE—MAKES HIMSELF RESPECTED IN THE BARRACK—COMPANIONS—ATTEMPTS GEOMETRY AND ARCHITECTURE—HARDSHIPS—EXPERIMENT IN NECROMANCY—DREAM—THE BOTHY SYSTEM—LITERARY RECREATIONS—TEDIUM—END OF APPRENTICESHIP—THE BLESSING OF LABOR—PRACTICAL PHILOSOPHY.

The working season of 1822 finds him again on Conon-side. He is now in the third year of his apprenticeship, and he feels that he has a position in the barrack. "I had determined," said he in his letter to Baird, "early this season, to conform to every practice of the barrack, and, as I was an apt pupil, I had in a short time become one of the freest, and not the least rude, of its inmates. I became an excellent baker, and one of the most skillful of cooks. I made wonderful advances in the art of practical joking, and my *bonmots* were laughed at and repeated. There were none of my companions who could foil me in wrestling, or who could leap within a foot of me; and after having taken the slight liberty of knocking down a

young fellow who insulted me, they all began to esteem me as a lad of spirit and promise."

"The foreman of the squad, when a young man," writes Miller, "had bent his excellent natural parts to the study of his profession, and became so skillful in it as to be intrusted with the superintendence of a party of workmen while yet an apprentice. His early proficiency was a subject of wonder to his less-gifted companions; he was much gratified by their admiration, and acquired that appetite for praise which is of so general experience, and which in many instances becomes more keen the more it is supplied with food. He had too much sense to be open to the direct flatteries of other people, but he was not skillful in detecting his own; and having attained, in his limited circle, the fame of being talented, he set himself to acquire the reputation of being generous and warm-hearted; and this, perhaps, —for he was naturally of a cold temperament,—from that singular weakness incident to human nature, which has so frequently the effect of making even men of reflection derive more pleasure from the praise of the qualities or talents of which they are destitute than of those which they really possess."

Miller was advised by this man to study geometry and architecture. "With the latter," he says, "I had previously been acquainted; of the former, I was entirely ignorant. I had not even a single correct idea of it. The study of a few detached hours, though passed amid the distraction of a barrack, made me master of the language peculiar to the science; and I was then surprised to find how wide a province it opens to the mental powers, and to discover that what is termed mathematical skill means only an ability of reasoning on the forms and properties of lines and figures, acquired by good sense being patiently directed to their consideration. I perceived, however, that from prosecuting this study I could derive only amusement, and that, too, not of a kind the most congenial to my particular cast of mind. I had no ambition to rise by any of the professions in which it is necessary; and I chose rather to exercise the faculties proper to be employed in it in the wide field of nature and of human affairs,—in tracing causes to their effects, and effects to their causes; in classing together things similar, and in marking the differences of things unlike. The study of architecture I found more amusing; partly, I believe, because it tasked me less; partly because it gratified my taste, and exercised my powers of invention. In geometry I saw that I could only follow the footsteps of others, and that I would be necessitated to pursue the beaten track for whole years before I could reach that latest discovered extremity of it, beyond which there lies undiscovered, untrodden regions, in which it would be a delight to expatiate. Architecture, on the contrary, appeared to me a field of narrow boundaries. I could see at one glance both over it and beyond it. I have found that the grotesque cottage of a Highland peasant, the hut of a herd-boy, a cavern half veiled

over with trailing plants, an opening in a wood, in short, a countless variety of objects of art and nature, supplied me with ideas which, though connected with it, had not become part of it."

From mathematics, therefore, as previously from classics, Hugh Miller turned aside. His apprenticeship had begun with trying experiences, and its termination was marked also by extremity of hardship. In the September of this year, 1822, his master obtained work a few miles from Cromarty. Miller and he worked from dawn until nightfall. Their work was painful: They toiled "day after day, with wet feet, in a water-logged ditch," laying stone upon stone, until the cuticle was worn away, and the fingers oozed blood. Miller describes the labor as "torture." "How these poor hands," he says, "burnt and beat at night, as if an unhappy heart had been stationed in every finger! and what cold chills used to run, sudden as electric shocks, through the feverish frame!" His health was affected; a dull, depressing pain weighed upon his chest, and there were symptoms of pectoral blood-spitting. He lost his spirits, and thought he was going to die.

What with brooding on early death by day, wandering among tombs in night-visions, his brain was rapidly approaching that degree of agitation at which will and intellect fall under the dominion of mania.

In the "Schools and School-masters," and in the letter to Baird, he dwells upon the wretched and dissolute life of the two or three farm-servants who occupied the same bothy with himself. Their ordinary pleasures consisted in drinking, and amusements of a low and gross character. "The deteriorating effect of the large farm system," he wrote, "is inevitable; and unless means be taken to check the spread of the ruinous process of brute-making which the system involves, the Scottish people will sink, to a certainty, in the agricultural districts, from being one of the most provident, intelligent, and moral in Europe, to be one of the most licentious, reckless, and ignorant."

If two men ever lived who knew the Scottish people, and were able to give an intelligent opinion concerning them, these two men were Robert Burns and Hugh Miller; and their joint authority in favor of the old system and against the new, viewed in relation to the capacity of each to produce upright, independent, self-respecting men, will hardly be outweighed by any consideration.

It may be hoped that such bothies as that in which Hugh Miller lived at this time are no longer to be found in Scotland. The roof leaked; the sides were "riddled with gaps and breaches;" along the ridge, "it was open to the sky from gable to gable," "so that," he writes, "when I awakened in the night, I could tell what o'clock it was, without rising out of bed, by the stars which appeared through the opening." Even in that dismal place, Miller contrived to supply himself with the consolations of literature. He obtained the poems of Douglas and Dunbar, besides a collection of poems from the MS. of George Bannatyne, and "perused them with great interest;" but

even this resource failed him. The fuel used for warming the barrack became soaked with rain, and could not produce a blaze to read by, so that he could only stick doggedly to work, passing as many hours of the twenty-four in sleep as was practicable. "I restricted myself," he writes, "to two meals per day, that immediately after taking dinner I might go to bed; and in a short time this new arrangement became such a matter of habit, that I commonly fell asleep every evening about six o'clock, and did not rise, sometimes not even awaking, until nearly eight next morning, finding that sleep was not a bad make-shift in the absence of livelier entertainments." In the letter from which this is quoted he pronounces the spring and summer of the first year of his apprenticeship "the gloomiest seasons of his life;" in the "Schools and School-masters," the closing period is declared to have been "by far the gloomiest he ever spent." At both periods he suffered about as much as man can suffer; but in the intermediate stages there were glimpses, nay abiding gleams, of enjoyment. On the 11th of November, 1822, his apprenticeship came to an end.

He was now an accomplished workman; and perhaps in all his books there is no passage more weighty or valuable than that in which he gives his estimate of the importance of this fact, and impresses upon artisans the supreme necessity of being masters of their trade. "It is not uninstructive," he writes, "to observe how strangely the public are led at times to attach paramount importance to what is in reality only subordinately important, and to pass over the really paramount without thought or notice. The destiny in life of the skilled mechanic is much more influenced, for instance, by his second education—that of his apprenticeship—than by his first, that of the school; and yet it is to the education of the school that the importance is generally regarded as attaching, and we never hear of the other.

The careless, incompetent scholar has many opportunities of recovering himself; the careless, incompetent apprentice, who either fails to serve out his regular time, or who, though he fulfills his term, is discharged an inferior workman, has very few; and, further, nothing can be more certain than that inferiority as a workman bears much more disastrously on the condition of the mechanic than inferiority as a scholar. Unable to maintain his place among brother journeymen, or to render himself worthy of the average wages of his craft, the ill-taught mechanic falls out of regular employment, subsists precariously for a time on occasional jobs, and either, forming idle habits, becomes a vagabond *tramper*, or, getting into the toils of some rapacious taskmaster, becomes an enslaved *sweater*. For one workman injured by neglect of his school education, there are scores ruined by neglect of their apprenticeship education. Three-fourths of the distress of the country's mechanics (of course not that of the unhappy class who have to compete with machinery), and nine-tenths of their vagabondism, will be found restricted to inferior workmen, who, like Hogarth's "careless apprentice," neglected the opportunities of their

second term of education. The sagacious painter had a truer insight into this matter than most of our modern educationists."

During his apprenticeship, the character of Miller began to reveal the essential traits which we afterwards find in it. "Gloomy" many of its seasons were; the "gloomiest" of his life,—at least until he became a literary celebrity and editor of a religious newspaper; but both its gloom and its gladness went to the making and maturing of his character. The aching joint, the fevered pulse, the breast oppressed with pain, the eye swimming in bewildered trance of agony and exhaustion; the meditative midnight hour, when his eye marked the stars as they crossed the rent in the roof; the evening wanderings in woodland and by stream, when sunset clothed in ruddy light the old tower on the crag,—these constituted the true education of Hugh Miller. Henceforth we recognize him as the man he was, and are able to trace in his countenance those lines of fortitude and resolution which so strongly marked that of his father. He had won the first decisive victory of life, earnest of all other victories,—the victory of reason and conscience over momentary inclinations, of intelligent will over laggard indolence and lawless impulse. He had disciplined the wayward activity of boyhood into manly force. He had chastened rude strength into ordered energy. Blustering self-assertion, juvenile conceit, had given place to deliberate self-respect; and that rebellious disposition which had perplexed his uncles and been the despair of his mother was calmed and concentrated into modesty, into self-command, into the gentleness of conscious power. The flawed and brittle iron had become steel. "Noble, upright, self-relying toil," he exclaims, with grand enthusiasm, "who that knows thy solid worth and value would be ashamed of thy hard hands, and thy soiled vestments, and thy obscure tasks,—thy humble cottage, and hard couch, and homely fare!"

Not, however, to all men is toil an education and hardship a blessing. Hugh Miller came to his apprenticeship fortified against evil, and prepared for good by that training in courage and truthfulness, in just thought and manly feeling, which he had unconsciously received in companionship with his uncles. Those gentlemen of nature's finest modeling were, though he knew it not, the examples by which he shaped himself. He acted on all occasions as he felt that Uncle James or Uncle Sandy would have acted. How bravely he makes the most of adverse circumstances! How cheerfully he accommodates himself to his situation! How kindly are the relations he establishes between himself and his coarse and riotous associates! He has a deep-lying conviction of his ability to rise above the sphere in which he finds himself placed; but he has already got firm hold of a very ancient philosophy of life, a philosophy which has been of use to wise men in every age; and it has made him comparatively indifferent to what is called success. According to this philosophy, happiness is too subtle an essence to be purchased with

gold, or to be dealt out wholesale to one class of men as distinguished from another; the rude fare of the peasant is as sweet to him as his dainties to the peer; the honest pride which warms the heart of the capable artisan is as instinct with joy as the aristocrat's pride of rank or birth; nature's face has a smile for all who will lovingly look into it; and rising in the world may mean failing in all that makes life precious, character illustrious, man happy.

FAVORABLE OPINIONS FROM OLD DAVID WRIGHT AND UNCLE JAMES—FIRST WORK AS JOURNEYMAN—AUNT JENNY'S COTTAGE—SENDS POETICAL PIECES TO ROSS—SELF-DELINEATION.

On returning to Cromarty, Miller soon regains his health, and things wear for him on the whole a pleasant aspect. Old David Wright, who had occasionally been morose to his apprentice, now declares that, though unsecured to him by any written agreement, Hugh had been, "beyond comparison, more tractable and obedient than any indentured pupil he ever had." Uncle James, whose predictions of failure at work, as a natural sequel to failure at school, had contributed not a little to the support of Miller at the worst time,—for it would be exquisitely gratifying to punish and to please Uncle James by one and the same course of action,—does ample justice to the faithfulness with which, from a mere sense of honor, he has completed his engagement, and owns that there is in him, after all, the making of a man.

His first employment as a journeyman is characteristic. "Aunt Jenny," a sister of his mother, who had long wished to have some dwelling which she could call her own, and in which her spinning-wheel and knitting-needles might supply her modest wants, had never surmounted the alarm occasioned by the prospect of paying rent. Hugh inherited a little piece of garden ground from his father. Part of this he now devotes to the purpose of building a cottage for Aunt Jenny. Money he has none, but the few pounds which his aunt has saved are enough to buy wood for the roof and to pay for carting the necessary stones and mortar, and he builds the cottage. The worthy aunt is saved from fear of rent for the remainder of her days, and Hugh has his reward.

During the brief interval between the building of Aunt Jenny's cottage and his first engagement as a journeyman, he writes to William Ross, in Edinburgh, and copies out for him a selection of his poems.

The poems are fluent and vivacious, but display little original power or depth of melody. The following lines are not without a certain pensive sweetness and sincerity:

THE DAYS THAT ARE GONE.

"On the friends of my youth and the days that are gone,
In the depth of the wild wood, I ponder alone,
And my heart by a sad gloomy spirit is moved,
When I view the fair scenes that in childhood I loved.
Harsh roars the rough ocean, o'ercast is the sky,
The voice of the wind passeth mournfully by;
For winter reigns wide;—'sure 'tis winter with me;'
But a spring to my winter I never shall see:
For aught of earth's joys 'tis unmanly to moan,
Yet bursts the sad sigh for the days that are gone.
The fair flowers of summer have vanished away,
The green shrub is withered, and leafless the spray;
Yet memory, half sad and half sportive, still shows
How bloomed the blue violet, how blossomed the rose.
Say, shall not that memory as fondly retain
Hold of joys I have proved as of charms I have seen?
Yes!—Nature's fair scenes are more dear to this heart
Than the trophies of love or the pageants of art,
Yet more to this bosom those friends are endeared,
By whom in life's dawn the gay moments were cheered;
More cherished, though darker their memory shall be,
Than that of the rose or the violet by me.
Ye rocks, whose rough summits seem lost in the clouds,
Ye fountains, ye caves, and ye dark waving woods,
In the still voice of memory ye bid me to mourn
For the joys and the years that must never return,
The years ere the gay hopes of youth were laid low,
Or hope half-despondent had wept o'er the blow,
The joys, ere my knowledge of mankind began
By proving the toils and the sorrows of man.
Yet why should I sorrow?—poor child of decay,
Myself, like my pleasures, must vanish away,
And life in the view of my spirit may seem
The tossing confused of a feverish dream.
Yes, life is a dream, a wild dream, where the will
Striveth vainly the precepts of right to fulfill;
A dream where the dreamer to sorrow is tied;
A dream where proud reason but weakly can guide;
It controls not my spirit, despite of my will,
The joys of the by-past are haunting me still.
And oft when all bright on my night slumbers break
The spirits of pleasures I prize when awake,
When I seize them with gladness and revel in joy,
Comes the beam of the morning my bliss to destroy;
Away on the light wings of slumber they fly,
While their memory remains, and I languish and sigh.
O days of bright pleasure! O days of delight!
From me ye forever have winged your flight.
But the calm, pensive Muse still remains to beguile
The day of dark thought, of affliction and toil;
By the gloom of the present the past to endear,
By the joys of the by-past the present to cheer."

We may here give the following somewhat high-flown account of him-

self, which served as preface to a second copy of his juvenile poems, with which he seems to have favored Ross:

"CROMARTY, March 15, 1823.

"DEAR WILLIE—1823 would have sounded oddly seven years ago, about which time we first got acquainted; yet, by the natural course of things, it has become the present time, and the by-past years live only in the memory of the evil or good committed in them. In 1815, I was a thoughtless, careless school-boy, who proved his spirit by playing truant three weeks in the four, and his genius by writing rhymes which pleased nobody but himself. In 1823, that same school-boy finds himself a journeyman mason, not quite so free from care, but as much addicted to rhyming as ever. But is this all? Can he boast of no good effect produced by the experience of a space of time which brings him from his thirteenth to his twentieth year? Has that time passed away in a manner useless to himself and uninteresting to others? Not entirely so; for in that time he got acquainted with William Ross; in that time he changed the thoughtless hilarity of nature for the placid, tideless composure of sentiment; and in that time the gay hopes of fortune and of fame which engaged him even in the simplest days of his childhood have changed into a less noble, though not a less pleasing form. His happiness no longer depends upon the hope of the applause of others; not even of the approbation of his friends; he acts and he writes for himself. His own judgment is his critic—his own soul is the world to which he addresses himself; but do not imagine that his own tongue sounds his own praise, which I am afraid, if I went on any longer in this strain, you might justly say."

GAIRLOCH—LETTERS DESCRIPTIVE OF HIS JOURNEY FROM CONON-SIDE AND OF GAIRLOCH SCENERY — LOVE-POETRY — OLD JOHN FRASER—MAGNANIMOUS REVENGE — GAIRLOCH LANDSCAPES — BACK TO CROMARTY.

"About mid-summer, work turns up at Gairloch. Gairloch is an arm of the sea on the western coast of Ross-shire. Its length is, perhaps, somewhat more than eight miles, its breadth varies from three to five. The shores, with the exception of two or three little sandy banks, are steep and rocky; the surrounding country is highland in the extreme.

"There is neither horse nor plow in the village,—a long, crook-handled kind of spade, termed a *cass chrom*, and the hoe, supplying the place of the latter, the highlander himself, and more particularly his wife, that of the former; for here (shall I venture the expression?) as in all semi-barbarous countries, the woman seems to be regarded rather as the drudge than the companion of the man. It is the part of the husband to turn up the land and sow it; the wife conveys the

manure to it in a square creel with a slip bottom, tends the corn, reaps it, hoes the potatoes, digs them up, and carries the whole home on her back. When bearing the creel, she is also engaged in spinning with the distaff and spindle. I wish you but saw with what patience these poor females continue working thus, doubly employed, for the greater part of a long summer's day. I frequently let the mallet rest on the stone before me, as some one of them passes by, bent nearly double with the load she is carrying, yet busily engaged in stretching out and turning the yarn with her right hand, and winding it up with her left. Can you imagine a more primitive system of agriculture, or wonder that I should be half inclined to imagine that, instead of having taken a journey of a few score miles to witness it, I had retraced, for that purpose, the flight of time for the last six centuries?"

"I am busily courting three maids, who, though they have not a syllable of English amongst them, are very kindly teaching me Gaelic; and from a young lady, a governess, I have borrowed a few books. One of these is a small volume of poems by a Miss Campbell, twelve years ago a young lady of seventeen. At even that early age she was a poetess, and rich in those sentiments and feelings which we deem so fascinating in the amiable and accomplished woman. Even, though occasionally the *girl* peeps out in most of her pieces, I like them none the worse; her puerilities, joined to no equivocal indications of a fine genius, leading one to entertain hopes of her future eminence; and certainly, if her riper years have but fulfilled the promise which her earlier ones have given, she must be now a very superior person indeed. I feel much interested in her, and wish much to know what has become of her." . . .

Thus abruptly ends the narrative. Miller's jesting allusion to the three maids whom he was "courting," suggests the remark that his insensibility to female attractions in his youth, contrasts strongly not only with the impassioned admiration of Burns for every beautiful face he ever saw, but with the susceptibility to woman's charms common to vivid and poetical natures.

Rhyming or reasoning, courting or cogitating, Hugh Miller, during this season at Gairloch, is worth looking at. Not yet twenty-one, living in a hovel, from which water, a foot deep, has been drained off to render it habitable, his food oatmeal without milk, his companions stone-masons, his employment manual labor, he bates no jot of hope or heart, but takes the whole with a frank effulgence of mirth, a rugged humor of character, which bears him victoriously through. It never strikes him that there is hardship in his own lot, but he has ready sympathy for the distresses of others. Might not some Scotch artist try to realize for us that picture, drawn by Miller of himself with so little thought of picturesque effect, when the pensive lad drops his mallet and looks at the highland woman, bent nearly double with her burden, yet, as she wearily trudges past, working with both

hands? One can see the kind, grave, deep-thoughted face, the steadfast blue eyes moistening with compassion, the lip touched, perhaps, with a faint, mournful smile of stoical, not cynical, acceptance of the sternness of fate.

Miller's poetical faculty, though not powerfully stirred by the nymphs of Gairloch, and though more felicitous, now and subsequently, in prose than in verse, did not at this time slumber. That picture of the old, gray tower of Fairburn, "like a giant eremite musing in solitude," is genuinely imaginative.

One of Miller's Gairloch fellow-workmen exerted a most important influence upon him. I refer to John Fraser, one of three brothers, who, if Mr. Darwin's theory is sound, were a variation of the human species adapted to found a race of superlative masons and stone-cutters, and to outlive and extirpate, by natural selection, all other masons and stone-cutters. Miller states, on the authority of "Mr. Kenneth Matheson, a gentleman well-known as a master-builder in the west of Scotland," that David Fraser, the most remarkable of the brothers, could do three times as much as an ordinary workman. John, even when advanced in life, could build against "two stout young fellows" and "keep a little ahead of them both." "I recognize old John," says Hugh Miller, "as one of not the least useful nor able of my many teachers;" and the justice of the remark is attested by the admirably philosophic account which he gives of the lesson old John taught him. The secret of Fraser's power was that he saw "the finished piece of work," as it lay within the stone, and cut down upon the true figure at once, without repeating, like an ordinary workman, his lines and draughts. And is not this faculty of seeing with the mind's eye what the hand has to execute—of conceiving the work as a whole, so that there shall be neither hurry nor delay in carrying it out—essentially the faculty by which a Hannibal or a Napoleon wins battles, a Dante or a Shakespeare writes poems, a Titian or a Turner paints masterpieces?

The work completed, Miller removed, with two of his brother workmen, to a village in the neighborhood, to build a house for an innkeeper, who made a point of inviting them to dine with him on Sunday. "He was a loquacious little man, full of himself, and desirous of being reckoned a wit," but without capacity to play the part. Miller, less talkative than his fellow-workmen, was supposed by mine host to be available as a butt, and was made the object of sundry small witticisms. He took this in good part for awhile, but one day he retorted upon his entertainer and reduced him to silence. The consequence was, that he was excluded from the invitation next Sunday, and left to regale himself on oatmeal and milk in the solitude of the barrack. He took his revenge in a way gratifying at once to his pride and his kindliness. One of the favored workmen had bargained with the innkeeper to give the latter a hammer and trowel, but, after receiving the money for the articles, had played him false. "I

was informed of the circumstance," says Miller to Baird, "when on the eve of setting out for the low country; and taking my hammer and trowel from my bundle, I presented them to the innkeeper's wife—alleging, when she urged me to set a price on them, that they were a very inadequate return for her husband's kindness to me during the two first weeks of our acquaintance." It was a mode of revenge to which neither Uncle James nor Uncle Sandy could have taken exception.

Before quitting Gairloch, we may take his final picture of one of its landscapes: "There is a steep, high hill, rather more than a mile from the manse, to the summit of which I frequently extended my walks. The view which the eye commands is of a character wilder and more sublime than can be either rightly imagined or described. Towards the east and south there spreads a wide, savage prospect of rugged mountains, towering the one over the other from the foreground to the horizon, and varying in color, in proportion to the distance, from the darkest russet to the faintest purple. They are divided by deep, gloomy ravines, that seem the clefts and fissures of a shattered and ruined planet; and their summits are either indented into rough naked crags, or whitened over with unwasting snows—forming fit thrones upon which the spirits of winter might repose, each in a separated insulated territory, and from whence they might defy the milder seasons as they passed below. To the north and west the scene is of a different description; it presents a rocky indented shore, and a wide sea speckled over with islands. On both sides, however, though the features are dissimilar, the expression is the same. Scarcely more of the works of man appear visible in the whole wide circumference than appeared to the gaze of Noah, when he first stood on the summit of Mount Ararat, and contemplated the wreck of the deluge.

"It was on a beautiful evening in the month of June that I first climbed the steep side of this hill and rested on its summit. I was much impressed by the wide extent and sublime grandeur of the scene. Part of the eastern skirt of the Atlantic was spread out beneath me, mottled with the Hebrides. In one glance, I had a view of Longa, Skye, Lewis, Harris, Rona, Raza, and several other islands with whose names I was unacquainted. The sky and sea were both colored with the same warm hue of sunset, and appeared as if blended together; while the islands which lay on the verge of the horizon seemed dense purple clouds, which, though motionless in the calm, the first sea-breeze might sweep away. Toward the south my eye was caught by two gigantic mountains, which, as if emulous of each other, towered above the rest, like the contending chiefs of a divided people; while toward the east I beheld a scene of terrible ruin and sublime disorder—mountain piled upon mountain, and ravine intersecting ravine. All my faculties of reason and imagination seemed at first as if frustrated and held down by some superior power; the magnitude of the scene

oppressed me; I felt as if in the presence of the Spirit of the Universe; and the apology of the Jewish spies recurred to me, 'We were as grasshoppers before them.'"

This was written when Miller was twenty-seven. It is remarkable for the absence of all geological allusion, and for the strong human element in the imagery.

The winter of 1823 was spent, as usual, in Cromarty. Miller had no friend of his own age with whom he cared much to associate. He seems to have been in a trivial mood, and to have made business of amusement. "There was," he says, "a little mischievous boy of about ten years of age whom I choose as a companion for lack of a better. He was spirited and sensible for his years, and deemed me a very superior kind of playfellow. I taught him how to climb, and leap, and wrestle, how to build bridges and rig ships, and how to make baskets and rush caps. I told him stories, and lent him books, and showed him how to act plays, and lighted fires with him in the caves of the hill of Cromarty, and, in short, went on in such a manner that my acquaintances began to shake their own heads and to question the soundness of mine. My Uncle James, who used sturdily to assert, in the face of all opposing evidence, that my powers of mind averaged rather above than below the common standard, seriously told me about this time, that if I would not act more in the manner of other people, he would defend me no longer."

COMES OF AGE—SETS SAIL FOR EDINBURGH—PARTING REFLECTIONS—MORNING ON THE MORAY FRITH — FIRST SIGHT OF EDINBURGH — ABSENT FROM CHURCH FOR FIVE SUNDAYS AND "A FEW MORE" — HOLYROOD, CHARLES II.'S STATUE, EFFIGY OF KNOX, THE COLLEGE, FERGUSON'S GRAVE, DR. M'CRIE — THE PANORAMA, THE THEATER.

In the autumn of 1823, Miller became of age, and claimed proprietorship of a wretched tenement on the Coal-hill of Leith, which had been a constant source of loss and annoyance to his mother from the time of his father's death. His wish was to dispose of it, and, to investigate the affair on the spot, he sailed from Cromarty for Leith in the spring of 1824.

"Two days of our voyage had passed pleasantly, but upon the morning of the third I was surprised and somewhat disheartened when, upon getting on deck, I perceived nothing but a dark rolling sea, and a dense cloud of mist closing upon the vessel upon every side. . . Often as I paced the narrow space the deck afforded me, did I behold in fancy the scenes I was soon to visit, and as often was that fancy carried back to picture the regrets and joys of home. But that you may better know what my thoughts were, I insert the copy of a short, I should rather say unfinished, poem I composed that morning. It will show you what ideas I had formed of Edin-

burgh, and how little the hope of its pleasures appeared when compared with the well-proved joys of the home I had left:

"Thou mayst boast, O Edina, thou home of delight,
For thy gallants are gay, and thy ladies are bright;
August is thy palace, thy castle sublime
Has braved the rude dints of fire, battle, and time.

"Thou mayst boast, O Edina, thou famed abode
Of the wise and the learned, of the great and the good;
Thou mayst boast of thy worthies, mayst boast of thy towers,
Thy halls and thy temples, thy grots and thy bowers.

"Yet lovelier by far and more dear to this heart
Than all your gay trophies of labor and art,
Is the home of my fathers, the much-loved land,
Of the dauntless of heart and the mighty of hand.

"'Tis there the gray bones of my fathers are laid,
'T was there that my life's sunny friendships were made,
And till death chills my bosom and closes my e'e,
These friends and that land shall be dear unto me."

"The weather was still extremely thick, and though my eyes were earnestly fixed in that direction, I could see but little of Edinburgh. These were but transient glimpses, but of the town of Leith, I had a full and distinct view. A young lad, one of the passengers, was pointing out to me the harbor, docks, and public buildings, and between the amusement his remarks afforded me, and the pleasure I took in looking at the vessels we passed and repassed in the roadstead, an hour or two flew away very agreeably."

His verses are so poor that an apology may seem necessary for presenting them to the reader. But here we have at least the lad Miller in his habit as he lived, with no gleam from the after-time to disturb the artless unconsciousness of modest, simple-hearted youth. Both in his letter to Baird, and in the "Schools and School-masters," there are elaborate pictures of his first sight of Edinburgh. It is well to remember that the bareness in the record of his impressions which meets us in these letters on Edinburgh, may arise partly from his inexperience.

The great city—to one who had never seen a larger town than Inverness, it was very great—threw him at first out of all habitudes. He frankly confesses, "though conscious that by so doing he will lay himself open to merited censure," that on the first four Sundays after his arrival he absented himself from church, and "strolled through the streets of Leith and Edinburgh;" that the fifth was occupied in scaling Arthur's Seat and viewing the city and adjacent country from its summit; and that "a few more" were passed in the company of some townsmen of his own, who, "Cameronian-like, preferred the open air to a church."

He is much disappointed with the High Street, having been led by

something he had read in the works of Smollett to fancy that it was "one of the finest in Europe." He looks with great contempt upon the equestrian statue of Charles II. in Parliament House Square. "This lascivious and dissipated monarch," he says, "is attired in the garb of an ancient Roman; and, by his appearance, a person unacquainted with the history of his reign might suppose him to have been a sapient and warlike prince, dauntless in the field and wise in the council. . . . . When I first saw the statue, I could not help quoting a few lines from Thomson's 'Liberty,' which will appear to you as it did to me, the character of Charles the Second faithfully drawn, maugre the inscription and the Roman dress:—

> "'By dangerous softness long he mined his way:
> By subtle arts, dissimulation deep,
> By sharing what corruption showered profuse,
> By breathing wide the gay lascivious plague,
> And pleasing manners suited to deceive,
> A pensioned king,
> Against his country bribed by Gallic gold.'"

The natural and unaffected manner in which Miller alludes to Smollett and Thomson is not without significance. How completely this young mason is already a literary character!

His estimate of Edinburgh College is high, and the terms in which it is couched prove that he had already acquired some technical knowledge of architecture. "The College in my opinion is the finest building in Edinburgh, either taken in its parts or as a whole. It forms a square, the exterior of which displays all the chaste simplicity of the Doric order, and the interior the lighter graces of the Ionic and Corinthian."

He visits the burying grounds of the city. Here is an interesting note: "I have seen the grave of poor Ferguson, and the plain stone placed at its head by his brother in misfortune and genius, Robert Burns. I felt much affected when standing above the sod which covers the mortal remains of the young poet, and could have dropped a tear to his memory and to the memory of his still greater successor, but I was not Shandean enough to command one. You know I never could weep except when insulted and stung to the heart by those whose unkindness I could not or would not resent, and then the tears I dropped were those of grief, rage, hatred—in short, the offspring of any passion except tenderness." This is a touch of self-portraiture worth whole chapters of retrospective delineation.

In another letter, dated October, 1824, and addressed to his Uncle James, we meet with the following careful sketch of Dr. McCrie: "In age and figure I know not where to point out any one who more resembles him than yourself. His countenance is pale and expressive, and his forehead deeply marked with the lines of thought; the spareness of his habit reminded me of long study and deep re-

search, and his demeanor, at once humble and dignified, finished the portrait. You may doubt—when I tell you that the discourse he that day delivered, was one of the best I ever heard—that my partiality blinded me to its defects. This was not the case; for, though partial to the doctor, it was his superior talents that made me so, and had his discourse been of that dull, commonplace kind, which I have often heard in a church that shall be nameless, my disappointment would have been great in proportion to my expectation. I need not tell you that, as an historian, Dr. McCrie ranks very high. At a time when every witling thought himself licensed to ridicule the firmness or denounce the boldness of the Reformers of our religion, the doctor stood forth in their defense, and, endowed with powers equal to the task, dispersed the dark cloud of obloquy in which partial or designing men had enveloped their names. If we consider him as a preacher, he will appear in a light as favorable. His manner is calm yet impressive, and his sentiments (always beautiful, and ofttimes highly original) are conveyed in language strong and nervous, yet at the same time plain and simple. In short, Dean Swift's definition of a good style, 'proper words in their proper places,' can be very well exemplified in his. I have now heard him several times. One Sunday his voice, which is not naturally strong, was nearly drowned by loud and continued coughing, which arose from every corner of the church. For some time he went on without any seeming embarrassment, but just when in the middle of an important argument made a full stop. In a moment every eye was fixed upon the doctor, and such was the silence caused by this attention that for the space of a minute you might have heard a pin fall. 'I see, my brethren, you can all be quiet enough when I am quiet,' was his mild and somewhat humorous reproof, and such was its effect that for the remainder of the day, he received very little interruption. There was something in this little incident that gave me much pleasure. I thought it told more truly of the discernment and good temper of the doctor than even his discourse did, beautiful and instructive as that was."

There is a quiet accuracy in this portrait, which shows that Miller was beginning to find his hand as a master of English prose. In our last extract he appeared in the light of a philosopher and critic, but we are reminded, as we accompany him to the panorama, that he has not yet thrown off the boy.

"Upon the earthen mound where the good people of Edinburgh see shows and sights of all descriptions, from the smoking baboon to the giant of seven feet and a half, stands a circular wooden building, which in size and appearance reminds the reader of Gulliver's travels of the washing tubs of Brobdignag. In this building all the panoramic scenery which is painted in or brought to Edinburgh is exhibited. The battle of Trafalgar, together with a series of scenes representing the Emperor of France, from the skirmish of Genappe till his death in the solitary island of St. Helena, was, when I came

here, the subject of exhibition. Of this species of entertainment I had formed no idea, and willing to fill up the blank which a name unaccompanied with an idea leaves in the mind, and perhaps not a little urged by a natural fondness for sights of the amusing description, I left my work one evening about an hour sooner than usual, called upon my friend, Will Ross, as I passed his way, and accompanied by him made directly for the panorama. We were ushered into a darkened gallery, the sides and ceiling of which were covered with green cloth. Our eyes were immediately turned toward an opening about thirty feet in width, through which, by a striking illusion, we perceived the ocean stretching out for many leagues before us, and upon it the British fleet, commanded by Nelson and Collingwood, bearing down a double line upon the enemy, who, at a little distance, in the form of a crescent, seemed to await their coming. Not even in a camera obscura have I seen any thing so natural. The sun seemed beaming upon the water; the British pennant was unfolding to the wind; the vessels appeared as if gently heaving to the swell, while upon their decks all was bustle and activity. The marines were loading their muskets; the seamen were employed about the great guns; some of the officers were busied in giving orders, and others, with great anxiety, were looking through their glasses as if to catch every movement of the enemy. In truth, the deception was so complete that, forgetting the ground upon which I stood, I fancied myself just on the eve of a great battle, and felt my mind impressed with that indescribable emotion which, in the reality of such a circumstance, the young soldier always feels. This scene was soon changed, and in its place another represented which displayed all the terrible confusion of the engagement. The first only showed us the cloud that concealed the storm; here it was represented as if bursting in its full fury. It was the deck of the 'Victory,' as it appeared at the moment Nelson received his death wound. You will have some idea of the size of the picture when I tell you that there were above two hundred figures, all as large as life, at once under my eye. In the middle of these was Nelson; the sword was falling from his hand; his features were distorted as if by sudden and acute pain; and the pale, cadaverous hue of his countenance betokened speedy dissolution. The attention of the figures nearest him seemed to be entirely engrossed by his fall; an anxious expression of the countenance or a sudden turn of the head showed that those at a greater distance had some faint perception of what had happened, while others in the outskirts of the picture were busied in working the guns, or in supplying those who wrought them with ammunition. A few paces from Nelson a young officer was eagerly pointing out to a marine the main-top of one of the vessels with which the 'Victory' was engaged, from which the fatal bullet was supposed to have come, and he, with great deliberation, was leveling his musket in that direction. The third scene was of a terrific description. It represented

the battle as if drawing near its close. In the foreground was the 'Redoubtable,' a French ship-of-the-line, on fire. The flames were bursting out furiously from window and gun-port, tinging the waves below with a red and fiery glare. Some of the crew were seen throwing themselves overboard; while others, with despair depicted on their countenances, were clinging to the vessel's sides as if uncertain which death to choose. The fourth and last scene was of a calm, but, though it represented the hour of victory, of a gloomy character. In the distance, a few of the fugitive vessels were seen giving their broadside and crowding on every sail to expedite their flight. In the foreground, all was desolation. Dismasted and shattered vessels, huge fragments of rigging to which a few shivering wretches still clung, and a sun again shining through a clearing atmosphere on the madness and the misery of man, made this scene, like the last of a tragedy, by far the saddest."

From the panorama he turns to the theater. Much of his reading, he says, had been of a description approved by Uncle James, but he had read more plays and novels than would have been sanctioned by that stern moralist.

"When reading," he says, "the plays of Shakespeare or of Otway, of Rowe or of Addison, I saw with the mind's eye their heroes not as actors, but as men; and the scenes they described brought to my view not the painted scenes of the stage, but the real face of nature, in the same manner that a beautiful portrait gives us the idea of a real person, not of a mask. But when I saw men who neither in appearance nor reality came up to the idea I had formed of the characters they represented, I rated them in the bitterness of my soul as mere pretenders who could not act their part upon the stage so well as common men do the parts assigned them in the great drama of life." In his letter to Baird, he says: "I was more pleased with the panorama than with the theater. I several times attended the theater, but I did not derive from theatrical representation half the pleasure I had anticipated. I was displeased with both actors and the stage. The stage I *now* regard as merely a little area floored with fir deal and surrounded by painted sheets—the actors as a company of indifferent-looking people who could bear no comparison with either the ideal *dramatis personæ* of my imagination, or the real characters whom I had seen acting their parts in the great drama of life. On the evening I first sat in the Theater Royal of Edinburgh, I felt as if, after having admired an exquisite portrait, which the art of the painter had almost awakened into life, I should be asked whether I could not recognize the original of it in an inanimate image of wax."

NIDDRIE AND THE WORKMEN—MILLER PREJUDICED BY THEM AGAINST THEIR CLASS.

Miller soon found employment in his trade, near Edinburgh, in building an addition to Niddrie House. To give ourselves a vivid idea of the locality, exactly as it impressed itself upon him at the time, we avail ourselves of his own description, December, 1824:

"We shall, if you please, ascend the highest pinnacle of Niddrie House, and from thence survey the country. As far as the eye can reach in an east or southerly direction, a low, unvaried flat presents itself, gradually rising, as it recedes from the sight, into low, swelling hills, and falling with a sweep as gradual toward the Frith of Forth, which from this elevation appears in all its extent, glittering with many sails. Upon the north and west the face of the country is of a bolder character. Arthur's Seat and Salisbury Crags upon the one hand, and the blue, heathy Pentland hills upon the other, will remind us of the beautiful and picturesque scenery which surrounds our native town. . . To the grounds about Niddrie, my work gives me access. Often, in the fine summer evenings, have I sauntered through its fields and woods, alone, but not solitary, watching the last beam of the sun as it tinged with a purple hue the Pentland hills, or, as it streamed on the roofless walls and dismantled turrets of Craigmillar Castle. . . . Niddrie House is a large, irregular building, bearing date in one part 1636, and in another not yet finished. The modern addition will, when the winter storms of a few years have soiled the natural hue of the stone, and rounded the angular moldings, appear by far, the most antique, as it is executed in the heaviest style of the Saxon Gothic. The large, mullioned windows are crowned with rich labels, and the walls deeply indented with molded embrasures. Octagon turrets rising above the roof, project from every corner, and instead of those large stacks of chimneys which disfigure many modern houses, here every one has its own airy column connected at top to the rest by a star-like cope. When finished, you might suppose this building, from its antique appearance and secluded situation, to have been some nunnery founded by that church-endowing monarch, David I. Adjoining the house is a large garden, which, from its irregular and partial cultivation, differs very little in appearance from the surrounding pleasure-grounds. In that corner of it which lies nearest the north-west gable of the house is a vault in which the Wauchopes of Niddrie, time immemorial, have been interred. Its front is screened by a huge bush of ivy, which, overshading the door and twining about a sepulchral urn that rests directly above, gives the whole a gloomy, yet picturesque appearance. Death does not move the bodies of the proprietors of Niddrie far from the house which sheltered them when living; the dead Laird in his vault is not thirty feet distant from the living one in his bedchamber. Bounding the other extremity

of the garden is a burying-ground, in which the humbler inhabitants of the country and village adjacent, find their last resting-place. It is a solitary spot, embosomed in wood, and at a considerable distance from any house. These circumstances, which in the north country would make a burying-ground, after night-fall, the supposed haunt of restless spirits, here affords the violator of sepulchers opportunity to tear from its grave the newly deposited body, and to convey it to some of the dissecting-rooms about Edinburgh. Such is the barbarous audacity of these wretches, that they frequently break and overturn monuments which lie in their way; and, without any desire of concealing their depredations, leave the violated graves half open, and scatter around them, as if in derision, the cerements that wrapped the body. I hope I am not bloodthirsty, yet I think I could level a musket at the villain who robbed the tomb of the body of one of my relatives, with as much composure and with as little compunction as I would feel in taking aim at a wooden target.

"The house, or rather cottage, in which I at present lodge stands upon the side of the Dalkeith road. It is sheltered on the north and west by the Niddrie woods, and on the east fronts a wide though not diversified prospect of corn-fields and farm-steadings. From the door, at night, through a long, wooded avenue, I see the Inchkeith light twinkling in the distance, like a star rising out of the sea."

With the peace and beauty of nature around him, and Edinburgh at hand, his circumstances might at first sight be pronounced favorable.

There was, however, a very important drawback. It was a serious misfortune to Miller, and one which left deep traces of its injurious influence upon his mind, that the men in company with whom he worked at Niddrie were, for the most part, dissolute and worthless. Nor were the exceptions of a kind likely to inspire him with any enthusiasm for the order to which he provisionally belonged. They were men of strong religious sentiments, but narrow intellects, unable, save by the silent eloquence of their moral superiority to the rest of the squad, to make any impression either upon him or upon their comrades. The others were as bad specimens of their class as it is possible to conceive. Selfish and willful as spoiled children, brutishly sensual, flippantly, because ignorantly, infidel, habitually profane, they showed Miller how base a thing a working-man can be, and to his dying day his opinion of working-men retained the stamp which it received in the society of these reprobates. Owing to the building mania, which was at its height at this time, they had abundance of work and high wages; but they were mean enough to be jealous of the workmen from the North, and Miller found himself exposed to the thousand nameless vexations which spiteful cunning can suggest to mechanics wishing to subject a comrade to humiliation. It is often necessary for a stone-cutter, in order to have the block which he hews placed conveniently for the chisel and mallet,

to be assisted by his fellow-workmen. This customary civility was refused to Miller, whose pride prevented him from begging a favor, or complaining of its being tacitly refused. The ablest, and, except himself and the religious workmen, the best in the squad, was a young man whom he calls "Cha." He was the "recognized hero" of the band, and his heart seems to have smote him on account of the base combination against a stranger. He put an end to it by stepping out one day to assist Miller, when he was being left to roll up to his block-bench a stone of the size which two or three commonly united to place.

Even Cha, however, was not merely a blackguard, but, in all that relates to moral sanity and self-respecting manhood, a fool. Like the majority of his fellows, he celebrated the fortnightly payment of wages by two or three days of drunkenness and debauchery.

At first hated as an intruder, and ridiculed as a Highlander, Miller, being found to be not only capable of holding on his own path, but superior in the valued accomplishments of swimming, leaping, running, and wrestling, rose into something like popularity among his fellow-workmen. It was impossible, however, that between him and them there could be any communion; and, tacitly accepting these sixteen masons of Niddrie as representatives of their class, he acquired a profound distrust, sharpened and embittered by contempt, for workmen in general. It can not be denied that, so far as these unfortunates were concerned, he gave working-men a fair trial, and looked candidly and boldly into their ways and habits. He permitted himself to be carried along in the stream when the masons of the district turned out on a strike, and he forced himself to endure one or two dreary hours in accompanying them to the foul subterranean haunt where they enjoyed the sport of badger-beating. Every thing he beheld in the character and conduct of these workmen offended his higher nature. They were too far below him to exert any such influence as might have tempted him to a fellowship with them. In an atmosphere of profanity, sensuality, and the most coarse and sordid selfishness, he continued an Apollo among neat-herds, pure, proud, and lofty-minded.

THE STONE-CUTTER'S DISEASE—LINES TO SISTER JEANIE—WRITES AN ODE ON GREECE AND OFFERS IT TO THE "SCOTSMAN."

Miller, after working two seasons, returned from Edinburgh in unbroken spirits. Whatever the drawbacks of his Edinburgh sojurn, he had never ceased to be happy, and his mood, as we learn from an expression used in a letter to William Ross, had commonly been that of exuberant gayety. But one circumstance connected with his work while at Edinburgh now comes into view, to which it is impossible to refer without mournfulness. While the young journeyman, so

brave of spirit, so modestly content with his exile from the society he was fitted to adorn, was cutting blocks into pillars in the shed at Niddrie, the seeds of painful and ineradicable disease were being sown in his constitution. The hardships of his apprenticeship had brought him to the gates of death, and although he seemed to have recovered his strength, it is probable that his lungs were of less than the average vigor when he entered as a journeyman upon the occupation of stone-hewing. In two seasons he became so deeply affected with "the stone-cutter's malady," that he had to choose between throwing himself loose for a season from his employment and certain death. "So general," he says, "is the affection, that few of our Edinburgh stone-cutters pass their fortieth year unscathed, and not one out of every fifty of their number ever reaches his forty-fifth."

For the first month or two after his return to Cromarty, he deemed it probable that his illness had gone too far for recovery. "I still remember"—these are his words—"the rather pensive than sad feeling with which I used to contemplate, at this time, an early death, and the intense love of nature that drew me, day after day, to the beautiful scenery which surrounds my native town, and which I loved all the more from the consciousness that my eyes might so soon close upon it forever." It was at this time that he composed the lines "To Jeanie." The little girl of five, to whom he addressed them, was his mother's eldest daughter by her second marriage. With that gentleness which ever characterized him, he made friends with Jeanie, and led her by the hand in his quiet walks. The lines are in Scottish dialect, of which Miller was never such a master as Burns. They are not distinguished by power or originality, but are interesting as a reflex of his mood at the time, and breathe—the closing stanzas especially—an unaffected and artless pathos:

"Though to thee a spring shall rise,
An' scenes as fair salute thine eyes;
An' though, through many a cludless day,
My winsome Jean shall be heartsome and gay:

"He wha grasps thy little hand
Nae langer at thy side shall stand,
Nor o'er the flower-besprinkled brae
Lead thee the lownest an' the bonniest way.

"Dost thou see yon yard sae green,
Speckled wi' many a mossy stane?
A few short weeks o' pain shall fly,
An' asleep in that bed shall thy puir brither lie.

"Then thy mither's tears awhile
May chide thy joy an' damp thy smile;
But sune ilk grief shall wear awa',
And I 'll be forgotten by ane an' by a'.

"Dinna think the thought is sad;
Life vexed me aft, but this mak's glad;
When cauld my heart and closed my e'e,
Bonny shall the dreams o' my slumbers be."

But he is young, and though his lungs have been permanently and incurably injured, the energy of his constitution, aided by repose and by peace of mind, is sufficient for the present to conquer the disease. With returning health return his interest in life and his intellectual ambition.

It was in September of 1826 that Hugh Miller made his first attempt to address his countrymen in the columns of a newspaper. He wrote an "Ode on Greece," which is hardly above the average standard of juvenile compositions, though here and there a vigorous note breaks through, echoed from Byron.

How this trumpet-blast might have influenced the Greeks we can not tell. The editor of the "Scotsman" proved a Trojan on the occasion, and Miller's Ode was returned upon his hands.

Not long after, Hugh refers to the subject in a letter to Ross, and bravely decides that the piece might not have been worth publishing after all. "Perhaps"—he thus expresses his philosophical resignation—"my Ode was ill-timed; perhaps its merits are of so doubtful a kind that no one except myself can discover them; perhaps—but I have said enough. Why should I be a seeker after fame? Fame is not happiness; it is not virtue. Bad men enjoy it; wretched men attain it. It rewarded the deeds of Erostratus as largely as those of Leonidas." With equal judiciousness and self-severity, he touches upon his efforts in the way of mental improvement. "It is the remark of a celebrated writer that without long and serious application no man, however great his natural abilities, can attain the art of writing correctly. At one time I flattered myself with the hope of becoming a correct writer; and, with the intention of applying myself sedulously to the study of the English language, I collected several works that treated of grammar and composition. Besides these helps I also calculated upon the assistance of my friend, John Swanson. But though repeatedly warned by experience, I did not calculate upon that volatility of mind which I have ever found as difficult to fix upon any single object, whatever may be its importance, as to fix quicksilver on an inclined plane; and now I can look back upon my half attempt at becoming an English scholar, just as I can upon every other speculation in which I have been engaged. I see a fine foundation laid, but no superstructure. I still propose, however, to become a correct writer, but it must be in the manner in which Cowley became a grammarian. That ingenious poet, speaking of himself, says: 'I was so much an enemy to all constraint, that my masters could never prevail on me, by any persuasion or encouragement, to learn without book the common rules of grammar, in

which they dispensed with me alone, because they found I made a shift to do the usual exercise out of my own reading and observation."

In a letter written about the same time, we have sundry remarks on literary subjects. "You ask me whether I now read Byron or Ovid. I reply in the affirmative. I do read every work of ability that falls in my way, whatever the opinions or intentions of their authors were; but in reading these works I always strive to keep in view certain leading truths, which serve as tests to discover and separate sophistry from argument, and as lights to dissipate those shades of obliquity which are cast over virtue, both by its artful enemies and injudicious friends. At the birth of our Savior, the shrine of Apollo and Delphi spake no longer with its mysterious organs of what was, or of what was to come. He who was the truth had come into the world, and every oracle of lies had become dumb. At His death, the veil of the temple was rent in twain, and truth was no longer a mystery. Thus, by His powers that which was false, and that which was true, became alike evident. The Gospels are still in our hands, and they, like Him of whom they speak, silence falsehood and discover truth. He who takes up the writings of Byron, Ovid, or Moore, or any of the many writings of those men who have so fearfully misapplied the talents which God gave them, will, if impressed with a deep sense of the true religion, run no risk of being allured and led astray by the blandishments of vice. But what can induce, it may be asked, a man of religious principle to peruse a volume in which he must, of necessity, come in contact with the allurements of vice; in which all that he loves will be made to appear in its least lovely form, all that he hates or has to fear in its most engaging and dangerous? To this I would reply that it is no very honorable safety which is procured by flight. Why should a man who stands upon the advantage ground of truth and virtue yield to the emissaries of vice and error? May he not, as did Gideon the son of Joash, descend into the camp of these Midianites, and listen to the ominous visions which perplex them, or examine the unsocial sophistries upon which they have founded their systems, or expose the futility of the vain beliefs upon which they have founded their hopes? But, to speak in plainer language, there are many advantages which may be derived from a real philosophical perusal of the writings of these men. Many of them were endowed with extraordinary talents, were the friends of civil liberty, and excelled in the art of reasoning and of writing well. I can not read the Essays of Hume without seeing the necessity of entrenching myself behind the bulwarks of Christianity. All those outworks which are raised in every direction around these bulwarks, some of them by mistaken good, and others by designing bad men, must be forsaken; for I find I have to do with a foe who can lay bare the designs, and demolish the sophistries of the designing priest, who can crush at one blow, the boasted illuminations of the enthusiast and

fanatic. But when I retire within the citadel of Christianity, I see from it the ingenious philosopher becoming a sophist, the powerful warrior assailing a rock of adamant with a battering ram of straw . . . The 'Don Juan' of Byron is an extraordinary poem, in my opinion ten times more so than the 'Hudibras' of Butler. It displays a thorough knowledge of human character,—of the crimes and frailties of mankind."

"*Feb.* 20.—Since I conversed with you, I have toiled and played, I have ate and drank, walked and slept; I have been happy and indifferent, and—no, not sad. And now I am again with my friend; draw, then, your chair a little nearer, and I shall tell you of my toils and amusements. I have been quarrying at Navity shore stones for a house which my cousin, Robert Ross, is going to build, and, with my uncles and cousins, have brought home several boat-loads of them. You remember Navity with its rough, bold shore, steep precipices and sloping braes, so I need not tell you that there are few places where he who labors is so ready to forget that labor is a curse. Nor need I tell you how pleasant I found it to sweep on the calm wave, in a fine frosty morning, past the rude bays and steep promontories of the Gallow Hill, or how grand and awful the wide caverns, rugged precipices, and wooded brow of that hill appeared when our boat crept round its shores, heavy laden in a clear moonshine night." His amusements are principally verse-making and solitary walks.

SERIOUS THOUGHTS — CORRESPONDENCE WITH SWANSON — FREAKISH HUMOR—WRITING IN THE OPEN AIR—CORRESPONDENCE ON RELIGION.

In a tone of earnestness, which contrasts strongly with his reference to religion in his earlier productions, prose or verse, Miller exclaims:

"Hark! wherefore bursts that rapturous swell?
Why are the night's dark shadows riven?
'A Saviour sought the depths o' hell,
That such as thee might rise to heaven.'

"My cares, my hopes, my wishes climb
To reach that friend who reigns above me;
Truth's best perfection dwells in Him,
And He has sworn to aid and love me."

The composition of these stanzas is connected with a revolution which has been silently transacting itself in the mind and character of Hugh Miller, and which will come under our notice as we review his correspondence of this period.

We have seen that from his childhood he had displayed a fine natural disposition; that he was fearless, unselfish, affectionate. Of the baser passions, avarice and cruelty, he never exhibited a trace; and of that less ignoble passion which has frequently co-existed with high and generous attributes of character, but which has frequently also,

as in Mirabeau, Burns, and Byron, made wreck of the palaces of the soul, he was singularly destitute. The extravagances of his boyhood, the pranks of a wild, free, gipsying life, reaching their climax of wickedness in robbery of an orchard and rebellion against an uncle, would not be regarded even by a morose school of moralists as portending a vicious manhood. The lessons which he received from Uncle James and Uncle Sandy had sunk deep into his heart, even when he chafed under their inculcation; and while he passed through the severely salutary discipline of his apprenticeship, his feelings toward those admirable men had gradually settled into a profound and filial regard. As we mark him, therefore, among his comrades of the bothy and the shed, we are struck by the moral nobleness, the virgin purity, which constantly attend him, and which render him undefilable by the foulness amid which he moves. But religion had not become the supreme influence in his mind; he was still—he knew it himself, and his friends knew it—"in the camp of the unconverted."

On returning from Edinburgh, he renewed his acquaintance with John Swanson, and the closest friendship was soon established between them. Swanson had recently thrown up a growing business in Cromarty, had resolved to become a preacher of the Gospel, and had proceeded, shortly after the renewal of his intimacy with Miller, to Aberdeen, in order to pursue his studies. His robust and healthful nature was aglow with the impassioned ardor of first faith and first love. "Oh!" he exclaims to Miller, in a letter dated Aberdeen, July, 1825, "I pant after that time when I may be fully assured that you are traveling toward Zion!"

In September, Swanson again writes, and still, apparently in response to hesitation exhibited, or objections started, by his correspondent, insists upon the plenitude of the divine mercy. "He is described as holding out His hands all day long to a rebellious and gainsaying people, and shall we impiously dare to say that He is unwilling to receive any? 'Tis true there are mysterious doctrines in the Bible; 'tis true, election, etc., are spoken of; but, if I know aught of the spirit of the Scriptures, these were never meant to keep a returning sinner back from God. Indeed, I presume we often mistake this very doctrine. It appears to me not as intended for our use before conversion, but after it. It seems to me given for the support and consolation of the saints, and not as a question for the returning penitent. We never hear of the Apostles making use of such expressions as these to an inquirer: 'It may be, you are not elected. It may be, though you tell us you believe, you are deceived.' But we find them asking this question, 'Dost thou believe?' Believe what? That Jesus is the Christ. And I ask you, my dear Hugh, dost thou believe? Do you believe that he lived? that he was the Sent of God? that he died to save sinners? I know that thou believest. Well, is your life and conversation corresponding to this belief? Do you pray? read the Scriptures? obey the injunctions of Christ?"

Miller, however, is shy of coming to close quarters. In a letter of 18th November he takes a sportive tone, and chats lightly on miscellaneous matters.

But Swanson is in a mood far too earnest to be pleased with Miller's light humor, and he gently rebukes his levity. He returns at once to his point, and puts the direct question, "Have you made your peace with God?" Hugh can now fence no longer. He confesses that he had been prevented from responding to his friend's appeals by a "backward, mistrustful pride and bashfulness." In simple-hearted reliance on the friendliness of a correspondent who justified the confidence reposed in him, he gives an account of himself. "At times I have tried to pray. At times I have even thought that these prayers were not in vain. I have striven to humble my proud spirit by reflecting on my foolishness, my misery and guilt. I have thought to be reconciled to that God who, in his awful justice, has doomed the sinner to destruction, yet who, in his infinite mercy, has found out a way of redemption; but I am an unsteady and a wavering creature, nursing in my foolishness vain hopes, blinded by vain affections; in short, one who, though he may have his minutes of conviction and contrition, is altogether enamored of the things of this world, and a contemner of the cross."

The letter in which this passage occurs is dated December, 1825. About this time Swanson becomes so absorbed in his studies that he finds it impossible to devote time to correspondence, and he writes Miller briefly, on the 14th of January, 1826, to that effect. "Go on, my dear Hugh," he says, in reference to the chief subject on which they had exchanged thoughts, "go on, and the Lord himself will bless you. If you are not under the teaching of the Spirit of God, I am deceived, and if I do not find you soon established in the way of happiness, peace, and life, I shall be miserably disappointed."

One can not help remarking, by the way, that this correspondence is creditable to these young friends. "How," exclaims Miller in one of his letters, "can I repay you for that deep, that generous interest which you take in my spiritual concerns! How can I make a suitable return for a friendship which, unlike the cold, selfish attachments of earth, approaches, in its nature and affectionate disinterestedness, to the love of heaven? Perhaps I say too much, I am certain you think so, but with a heart so full a wiser man could hardly say less." Modest, noble, kind-hearted Hugh! How many would have resented Swanson's interference in affairs which jealous pride and sensitive independence might so plausibly allege to lie solely between a man and his Maker! From the meanness of such pride and the bitterness of such independence, Miller's true heart guards him well. He is deeply grateful. Swanson, for his part, thrilling with joy in the possession of the pearl of price, yearns to share the treasure with his friend, and to seal their friendship with the seal of immortality.

Pleased, perhaps, for the moment, that his correspondence with

Swanson should take a less earnest turn, Miller recurs, in his next letter, to his vein of light, miscellaneous writing.

This wild and buoyant humor was not, however, constant with him. "You seem," he writes, "to have been in low spirits. Are you also subject to those strange rises and falls of spirit which, without any assignable cause, make your humble servant happy, miserable, and mad by turns? I wish the college session over, and you fairly settled at your mother's fireside. I am really vexed on seeing you determined on killing yourself. Is he not as much a suicide who swallows death in the form of a mathematical problem, as he who takes an ounce of opium? The latter is certainly the easiest way of getting out of the world, there is no pedantry in it." Affecting words, when read in connection with the history of Miller's closing years! How little did he think, while rejoicing in the freedom of the hill-side and the seashore, and warning his friend with gentle earnestness not to overtask his brain, that he should himself yield to the terrible temptation, and pay the penalty with his life! "Happy and miserable and mad by turns:" the expression is striking and strange.

He gives a somewhat satisfactory account of himself to his cousin, William Munro, in a letter dated 1st of May. "I am writing at this moment in the open air, under the shade of a honeysuckle. The sun is peeping through its leaves, and casting upon my paper spangles of a bright hue and strangely fantastic form. As I look upon them I can not avoid recognizing a picture of my own mind. It is thus its lights and shadows blend together. A little cloud has passed over the sun, and my page has become dark and somber; and is it not thus that my fair hopes and gay imaginings ofttimes pass away, and leave behind them a cloud of darkness?" This picture may be somewhat high wrought, as Miller had announced to William Ross his intention to send his cousin "a fine sentimental letter, resembling that of a boarding-school miss."

On the 2d of September, Miller writes to Swanson, "I feel that, after your earnest and affectionate exhortation, it would be something worse than unfriendly of me not to unbosom myself before you; yet what have I to confess? Were I an unbeliever, though I would assuredly lose my friend by confessing myself one, still that confession would be made. I would scorn to hold the affections of any one by appearing what I am not. Or if, on the other hand, I were a Christian in the true sense of the word, I hope I would have courage enough to avow my profession, not only to you or to those from whom I could expect nothing except kindness, but even to the proudest and boldest scorner But what profession can the lukewarm Laodicean make?—the man who, one moment, is as assured of the truth of the gospel of Christ as he is of his own existence, and who, in another, regards the whole scheme of redemption as a cunningly devised fable. It will not do! I am not at present collected enough to give you a faithful account of what is my religious belief; I will just say that, as

far as the head is concerned, my creed is a sound one, but alas for the heart!" The remainder of the letter accords well with this profession of indifference, or at least of vacillation and vicissitude, in spiritual affairs. He speaks of other matters, and bewails his bashfulness in society.

Swanson receives this letter and answers the same day. He implores his friend to get rid of the melancholy which preys upon his mind by a "full, free, and simple acceptation of the gospel. Pardon me, my dear friend," he adds, "when I say that I fear you have religious opinions not derived from the Bible. Read it as if you never heard a word concerning it before." On the 30th of September, Miller writes again: "I am still employed on the chapel brae in hewing a second tombstone for Colonel G——. That spot is now beginning to lose its charms; every breeze which passes over it carries a shower of withered leaves upon its wings; the herbage is assuming a sallow hue, and I stand alone in the midst of desolation, in all except sublimity of feeling the prototype of Campbell's last man. I do not know whether I am advancing in wisdom as in years (I rather suspect not), but somehow the thought of death often presses upon me in these days. I look upon the little hillocks which are laid above men and women and children, the traits of whose features are pictured in my memory, and when by its aid I conjure up their forms when, gay and restless, they followed the businesses or the pleasures of life, and then when, in the eye of the imagination, I behold them stretched in the dark coffin, cold, and black, and moldy, without form or motion, I pause and ask, What is this Death, this mighty Death, that turns mirth to sadness, that unnerves the arm of the strong and pales the cheek of the beautiful?

"I remember to have seen, many years ago, old Eben, the sexton, digging a grave. He raised a coffin, which, though much decayed, was still entire, and placed it on the earth he had thrown out. I was a mere boy at the time, and out of foolish curiosity, when his back was turned, I raised with the edge of his spade the lid of the coffin. The appearance of the moldering remains which it contained, nothing can erase from my memory. I see them even now before me, in all their sad and disgusting deformity, and still when I hear or read of the empire of death—of the wrecks of death, or of the change which death works on the human frame—imagination immediately reverts to a long, black skeleton, clothed over with a moldy earth to which, in some places, the rotten grave-clothes are attached. This is a disgusting image, but it is not a useless one, for when, thinking of death, I bare my arm and look at the blue veins shining through the transparent skin—when I look and think that the day may not, can not, be far distant when it shall become as black and as moldy as that of the skeleton—I start, for there is something in the contrast which removes all the accumulation of com-

monplace which the habit of hearing and speaking at second-hand of death hath cast upon that awful thing.

"But what is the fruit, you will ask, of these cogitations? Follow me a little farther and you shall see. If the soul be a mere quality affixed to matter, which shall die when that matter is changed from animate into inanimate, then, though the thought of the havoc which death works on the human frame tends to lower the pride of the haughty, it is not a harassing one to the philosopher. Life is full of evil and unhappiness; death is a state of rest. When the tyrant Edward invaded this country; when Wallace, its bravest defender, was betrayed and slain; when the carnage of Flodden filled Scotland with mourning, or the defeat of Pinkie with fear—I was neither sad, nor angry, nor afraid, for I was not called into existence until twenty-four years ago. And in a few years after this, if the soul be not immortal, I shall again have passed (if I may use the expression) into a state of non-existence, and though my moldering remains may raise horror in the breasts of the living, the vacuum which once existed shall not sympathize with them. But that the soul is immortal, if it be the same wise God that created the heavens and earth who formed man, I must believe; and if that soul, after it has departed from its fleshy nook, is to be punished or rewarded according to the deeds done in the body—this I also must and shall believe; then death becomes not the herald of rest, but the messenger of judgment. Thus far unassisted reason can go. Socrates went still further, for, when other philosophers were raving of an absurd, because unattainable, virtue, by the possession of which men were to be made happy both in this world and the next, he taught of the evil that dwelleth in the human heart, and of the help which cometh from God. But it is to the pages of Revelation we must turn, if it be our desire to learn with certainty how to prepare for death by making the Judge our friend.

"You have often urged me with a friendly zeal, both in speech and by writing, to forsake sin and turn to God. Your letters and conversations have had an effect—I wish I could add the desired one. I give some of my time to the study of the Scriptures, and have become perhaps nearly as well acquainted as the mere theorist can be with the scheme of redemption. Nay, more, I pray. But the day-beam has not yet, I am afraid, dawned upon me—the light vouchsafed is not a clear and steady one like the beam of the morning; it is rather like the reflection of lightning in a dark night—a momentary glimpse succeeded by an hour of gloom. My prevailing disposition is evil, and though I have oftener than once experienced a feeling strange indeed to the human heart—a feeling of love to God—the cares of the world and the allurements of pleasure draw away my affections, and the old man is again put on.

"The town clock has struck the hour of twelve—so, for the present, adieu!"

Swanson replies on the 9th of October.

A month elapses before Hugh replies, and his answer has none of the warmth of feeling for which we might have looked. "After perusing your last letter," he writes, "I sat down to tell you that I was not a little alarmed by your recognizing me as a Christian brother; I then stated my grounds of alarm; and, willing to furnish you with a kind of data by which you would be enabled to judge of the spiritual state of your friend, I recommenced a historical detail of the fluctuating opinions of my mind for the last seven years. But I now see that a narrative so long, and in which I will require to be so careful of error, will engross more of my time than I can conveniently devote to it at present."

The "historical detail," here referred to, in so far as it appears to have ever been written down, is contained in an unfinished letter, dated October, 1826, from which we extract:

"I know not in what words to confess that your last letter, friendly and affectionate-breathing as it was, alarmed and in some degree rendered me unhappy. You recognize, you address me as a Christian brother; and, when I look within and see how doubtful the signs of a radical change of heart are, when I see how little there is to justify even the limited profession I made when I last addressed you by writing, I tremble lest you are throwing away your affections on a deceiver, who is now even less worthy of your friendship than when he confessed himself a stranger to Christ. But why tremble on this account? If I am a deceiver, I am not a willful one; for the hypocrite only trembles when detected or on the verge of detection, and if, by mistaking an excited imagination for a changed heart, I deceive both my friend and myself, I am surely rather unfortunate than guilty.

"I believe I may term my education a religious one. I was examined in the Catechism by my uncles every Sabbath night, and forced to attend regularly at church. This, you will say, is a poor definition of the words religious education, but in nine cases out of ten it is all that is meant by them. As I advanced into the latter years of boyhood, I became impatient of this restraint, and, after many struggles, in which I showed a fierceness and desperation of character worthy of the liberty for which I strove, I became, as some of my friends satirically termed me, a lad of my own will. As a lad of my own will, I was a Sabbath-breaker, and a robber of orchards; and, as strange, foolish thoughts, passages of Scripture, and questions on the subject of religion would at times either flash upon my recollection or rise in my mind, just for the sake of peace, I also became an atheist. A boy atheist is surely a strange and uncommon character. I was one in reality, for, possessed of a strong memory, which my uncles and an early taste for reading had stored with religious sentiments and stories of religious men, I was compelled, as I have already said, for peace' sake, either to do that which was right, or, by denying the truth of the Bible, to set every action, good or bad, on

the same level, and I had chosen the latter as the more free and pleasing way. My mind, as you will see in the sequel of my story, long retained the bent which it at this time acquired; but my actions, restrained by a rising pride, by notions of honor, perhaps by a conscience which, though fast asleep, had its dreams, became less reprehensible. I became what the world calls honest; and, from a dislike of drink and noisy company, had all along preserved a habit of sobriety, but to every other vice to which a young man of sixteen is exposed, I was addicted. You are aware that, much earlier than this, I composed pieces in rhyme, which I called poems. One of the drawers of my desk is filled with copies of these youthful effusions, which I preserve both for the sake of the recollections attached to them, and for the history I can trace in them of the growth of my mind and its varying opinions.

"About the end of the year 1820, I had a fearful dream, which, for the time, had the effect of converting me into a kind of believer—a believer of I knew not what. I dreamed I was wandering through a solitary and desert country; that I was alone, restless, and unhappy. All at once the skies became dark and overcast, and a gloom like that of a stormy winter's evening seemed to settle over the face of nature. By one of those changes so common in dreams, the country appeared no longer unpeopled; but the figures I saw were so dark, so indistinct, so silent, that in my terror I regarded them not as men, but spirits who were wandering about in unhappiness until the time came in which they were to reanimate the bodies in which they once dwelt. A fearful presentment arose in my mind that the day of judgment was at hand; I felt the petrifying influence of despair pervade every faculty, yet, though my agony was extreme, I could neither weep nor pray. In a little time the clouds began to disperse, and through a clear blue opening, I perceive a large cloudy scroll spread on the face of the heavens, which, with a flickering, undulating motion, at one moment resembled a dark, sulphureous flame, and at another reminded me of a banner waving in the wind. I fixed my eyes upon it in fear and astonishment, and perceived that in its centre a few dark characters were inscribed. I strove to decipher them, but could not. In a few seconds, however, the coloring of the scroll deepened gradually, as the hues of the rainbow increase from dimness to brilliancy. I read its startling motto, 'Take warning!' and awoke. My mind was dreadfully agitated. The sweat, which, during my dream, had flowed from every pore, was cooled upon my brow, but my heart was still burning. In my terror I vowed that, for the future, I would be no longer a sinner, and I began to pray; but my prayers were addressed, not to the God of the Christian, but to the God of the heathen philosopher. I was awakened to a painful consciousness of sin. I had heard that God was merciful, and on the strength of that attribute I addressed myself to him; but alas! I did not know that his justice is as infinite as his mercy, and that

no sinner can be accepted by him unless he appeal to the sufferings and righteousness of that Saviour whom his sins have pierced.

"The recollection of my dream haunted me for about ten days, during which time I prayed. A natural bashfulness withheld me from making any show of sanctity, but my heart was very proud of its newly acquired purity, and I regarded myself as a much better man than many of my acquaintances. But the foundation on which my hopes were raised was not one of sand—a sandy foundation would have served me until the day of the tempest, whereas, the thin vapor upon which I had built sunk of itself without being once assailed. Suffice it to say that, as my fears subsided and my pride increased, my prayers became more and more a matter of form, until at length they ceased altogether, and except that I believed in the being of a God, and continued to see a beauty in moral virtue, I became, in thought and feeling and action, the same man I had formerly been.

"In the working season of the two following years, I wrought and resided at Conon-side,—a gentleman's seat and farmsteadings, situated on a bank of the River Conon, near where it falls into the Cromarty Frith. When there, there was no one for whose good opinion I cared a pin within twenty miles of me, so I felt myself at liberty to do or say whatever I thought proper. In a short time, I became a favorite with my brother workmen. "He is a good-natured, honest, knowing fellow," they would say, "but desperately careless of church." This was just the character I wished to bear; as for church attendance, I thought it rather a dubious virtue. Indeed, I had seen too much of the prejudices of mankind, and knew too little of true Christianity to think otherwise.

"When at Conon-side, I had an opportunity of studying several characters of the grave, serious cast, but the knowledge of them which I acquired there did me no good. One, a Mr. M——, was a man of a grave, taciturn humor, whose definition of the word 'Christian' would be, as I apprehended, 'a hearer of the gospel for Mr. McDonald's sake.' He was exceedingly reserved and unsocial in his manners, and little loved by his fellow-workmen. Once or twice I have seen him grow very angry when some parts of the conduct of his favorite preacher were censured,—censured, too, as I thought, with reason. There was another of the workmen with whom I wrought, who was of the grave, serious cast. He contributed quarterly to the support of the Bible Society, was regular in his attendance at church, and reproved swearing or indecent language every time he chanced to hear it among his companions. But it did not escape my observation that this man was so censorious that not even his brother saint, Mr. M——, was exempted from the severity of his animadversions, and so proud of his purity of life that the errors and misconduct of others afforded him pleasure. Perhaps he regarded them as foils to the virtues he possessed.

"Besides these two there were some others who made a profession of religion with whom I became partially acquainted; but the tenor of their lives was ill-qualified to impress my mind with a high opinion of the sanctifying influences of Christianity. One was a hard, austere man, of obtuse feelings, who seemed determined, whatever he thought of the world to come, to make the most he could of the present; a second was silly and weak; and a third was what I termed a Sabbath Christian—that is, one who attends church, calls the preacher precious man, can tell a great many of the strange legends of the Scottish Church, and reprobates the poor wretches who prefer common sense to fanaticism. And are these men Christians? thought I. I have often heard divines bid that part of their congregations which they termed men of the world look at the life of the Christian, and grow convinced of the power and truth of Christianity by that example which is superior to precept. I have obeyed them. I have observed his actions, and through these actions have striven to discover his motives, and what have I found? In good truth, the philosopher who sees clearly that he who believes and he who does not believe, only differ in that the one practices the grave and the other the gay vices of humanity, may well laugh at the pretensions of these divines, and tell them that they either speak of they know not what, or willfully deceive because it is their interest to do so.

"I remember one Sunday, after my companions had gone to church, and I remained behind, as was my custom, that, to pass away the time, I took a solitary walk in the woods of Conon-side. The day was pleasant, but, from a kind of nervous melancholy which hangs pretty often on my spirits, and is, as I believe, constitutional, I could not enjoy it. I felt quite unhappy, and after having had recourse to every species of wonted amusement, sat down on a green knoll, in despair of enjoying solitude for that day. A train of the darkest thoughts began to rise and pass through my mind. I looked upon what I had done in the past, I thought of the unhappiness of the present, I formed surmises of the future. There was a voice from within which incessantly whispered in my ear, 'You are doing wrong! you are doing wrong! and how, then, can you expect pleasure?' and so miserable did I feel from these cogitations and these questionings, that I started from my seat, and strove to dissipate them by strong bodily exertion. In a few hours after, my spirits had regained their usual tone, and I could look back upon what I had felt, and say, 'Have I experienced what men call an awakened conscience? What, then, is conscience? The breast of the murderer and the dishonorable, mean man may well be the haunts of remorse; but surely, with one who neither does nor wishes any man ill, conscience is but the ashes of early prejudices raked together by a disordered imagination.'

"In the latter end of the autumn of this year (1822) I wrought and resided at Pointzfield for several weeks. My constitution is naturally delicate, and by building in stormy weather on a wet, marshy spot of

ground, I caught a severe cold, which hung about me for several weeks; I felt my strength wasting away; my breast became the seat of a dull, oppressive pain, and, imagining I was becoming consumptive, I began seriously to think of death. So assured was I at this time of approaching dissolution, that even through the perspective of hope I could only look forward on a few short months of life, and, as I could not bring myself to doubt of a separate existence of soul or of a judgment according to deeds done in the body, I began seriously to think of a preparation for death. But how was this preparation to be made? I knew prayer to be the only language by which the sinner could intercede with the Deity for pardon; but then experience had shown me how unable I was of myself to bring my mind into the frame of devotion, or to preserve that frame unchanged when it was produced by fear, disgust, and the mingling dictates of reason. At length I bethought me of an expedient which I hoped would preserve me from that falling off or apostatizing, of which I had experienced two years before; for, awakening the sincere fervency of feeling which my expedient was to render lasting, I had before me the fear of death. For the three previous years, when I had freely and seriously pledged my word in a matter of importance, to any of my brother men, I had a pride of rigidly adhering to it. From this I concluded that, were I to pledge myself to God by oath, I would have a restraining bond upon me strong enough to preserve me for the future from known sin. I would thus be shut up by every principle of honor to serve God—of loving him I had no idea. I made and took my vow to be I know not what, called God to witness it, and for a few following days persisted in praying twice a day. But prayer soon became an irksome duty; proud thoughts over which I had no control, and strong desires that would not be repressed by a few light words, came rushing on my mind in a mingled torrent, and swept before them every vain resolve. To add to their strength, my health began to amend, and it not only appeared an impracticable, but even a foolish thing to strive any longer to be religious.

"I passed the winter of this year and the spring of the following one at home, and there became acquainted with an old companion of my uncles. He had resided at Edinburgh for many years, and, though a clever, was neither a steady nor respectable, man, but for the sake of becoming acquainted with his character, which was eccentric in the extreme, I courted his company and conversation. At Edinburgh he had been a member of one of those deistical clubs so common in large towns; and, by a natural quickness, and from the habit of speaking at their meetings, had acquired the faculty of arguing extempore with a good deal of skill. My uncles, whose principles and opinions were in almost every particular the reverse of his, impressed by early recollections, still continued attached to him, but, as might be expected, frequently attacked opinions which he was by no means slow to defend. The doctrine of predestination, that hobby-horse

of disputants, was brought frequently on the carpet, as was also the doctrine of universal, as opposed to partial, redemption. At first I merely listened to these verbal controversies, but seeing that my uncles, though well-grounded in the doctrines of Christianity, were ill-qualified to answer every objection raised against it by a veteran quibbler, out of a desire of assisting them, I set myself to examine the different bearings of the doctrines they defended. Predestination first engaged me. I read all that is said of it in Scripture, drew conclusions from the prescience of God, and from Plato's Dialogues of Socrates, and some other philosophic writers, and endeavored to produce data from whence to show that predestination is not a doctrine peculiar to revealed religion. I had long looked upon controversial divinity as the worst kind of nonsense; and since my argumentative conversation with my cousin G., had entertained an antipathy against verbal controversy of every kind; this, added to a hesitating manner of speech, and a consciousness of an inability to preserve my ideas from becoming confused when I waxed warm on my subject, after all my preparation, withheld me from attacking my brother deist.

"Had any one told me at that time that I was in reality brother in belief to a deist, I would have complained of injustice. In fact, my opinions were so wavering that, with a due regard to truth, I could not tell what I did or did not believe. I saw there were two schools of deism—the high and the low. Epicurus of the ancient philosophers and Hume of the modern, men who, while they remained skeptical on the subject of future rewards and punishments, and of the providence of God, cherished virtue for its own sake, both by example and precept, I regarded as members of the first; while I looked upon the brood of half-bred wits, who, with Paine at their head, battled with religion because it gave a deeper and stronger sanction to the laws of morality, as the masters of the second. The leaders of the former I consider to be good, wise men (indeed, I am still readier to regret their defects than censure them), while the whole body which composed the latter I regarded as a band of conspirators against all that is good or noble in human nature. I looked upon the Edinburgh deist as a pupil of the school last described; indeed, the irregularity of the life he led lent this opinion a strong sanction.

"The more I thought and read, the more wavering and unsettled my opinions became. I began to see that the precepts inculcated by the Christian faith are equal if not superior in purity to those taught in the school of philosophy; but then the strange, mysterious doctrines which mingled with these precepts had in them something repulsive. I could believe in many things which I did not understand; but how could I believe in things evidently not beyond the reach of reason, but directly opposed to it? I could believe that man is either a free agent, or chained down by the decrees of God to a predestined line of conduct; but how could I believe that he was at

once free and the child of necessity? And yet the contradiction (as it appeared) seemed to me to be the doctrine of the Bible.

"I regarded the main doctrine of Christianity as one of those which lie not beyond the reach of reason, but, as I have said, are directly opposed to it. How, thought I, can one man who is a criminal be pardoned and rewarded because another who is none, has, after meriting reward, been punished? How can it be said that he who thus pardons the guilty and punishes the innocent is not only just, but that he even does this that he may become just and merciful? It appeared still more strange than even this that the only way of becoming virtuous was, not by doing good and virtuous deeds, but by believing that Christ's death was an atonement for sin, and his merits a fund of righteousness for which they who thus believe were to be rewarded. Certainly, thought I, if the Christian religion be not a true one, it is not a cunningly devised fable; for its mysteries are either not far enough removed from the examination of the rational faculties, or too directly opposed to the conclusions which they must necessarily form. The mystery of the Trinity I regarded as an exception to this; the nature of God is so little known to man that I could neither believe nor doubt it."

In this abrupt and unsatisfactory manner the document ends. It will appear in the sequel that evidence exists in other quarters, enabling us to trace the essential facts of Miller's spiritual history.

NEW-YEAR MUSINGS—OPINION TEN DAYS LATER.

On the 1st of January, 1827, he writes to Ross. His reflections are not of a jocund character: "The first sun of the year has not yet risen, but I have trimmed and lighted my lamp, and set myself down to write by the assistance of its little red flame. . . . Many are the reflections which a closing and an opening year suggest. You have often seen that Egyptian symbol, an adder holding its tail in its mouth; and I am sure that you have observed that the slender circular body of that adder is but a dull-looking thing, varied as it only is by a slight difference in bulk, or a still slighter difference in the loops of its scaly coat; while, upon that part of it where its head and tail meet, the eye can rest with pleasure. It is said that this adder is a symbol of the year; and certainly, as the eye is attracted more by its head and tail, than by any part of its body, so the attention of the moralist is excited more by the beginning and close of the year than by any of its intermediate parts. The moralist, do I say? Alas! true moralists are by no means common characters, yet serious reflection at such a season as this is not confined to a class of men so extremely rare. I remember that at a stage of life removed little from childhood, on a New-Year's day, not all the halfpence my friends gave me could make me happy. A certain vague regret for the days of sport that had passed away, and a fearful anticipation of the days of care and toil which I knew

were coming on, conspired to cast a gloom over my mind. But in this the boy indulged in a folly not always avoided by the man. When I looked at the head and tail of the snake, I thought of the sting which in reality both of them bear, but not of the antidote growing near. I now perceive that it was unwise thus to suffer the clouds of unavailing regret and dismal anticipation to cast their shade over my enjoyments. He who taught that there is but one thing truly needful taught also that 'sufficient unto the day is the evil thereof.' It is an opinion of mine, that all the drinking and feasting so common at this season were at first resorted to for the sake of dissipating gloomy thoughts like those with which I was once perplexed. The more I think of this, the more I am confirmed of its truth. Judging from experience, it appears reasonable enough that the man who is unprepared to die should forget that he is mortal; but it is monstrous to suppose that, deeming as most do, death the greatest evil, he should yet joy at its approach. If an opening year warned a boy of the toils which awaited him, it may surely whisper to men of death. And it does! Get one of the most stupid of those who are revelers at this season to make a single moral remark, and that one will be, that he is now by a year nearer his grave than he was twelve months ago. From reflections like these, though custom, by giving its sanction to the festivities of the season, has, after its usual manner, obscured every circumstance of its own beginning and growth, I can regard that loud huzza which has penetrated even to this recess, as that of madness raised to drown the deep, low murmurings of thought. Many are the reflections which a closing and opening year suggest, and yet the writer who would set himself to collect and arrange these would find that there is little to be said of the years which commenced and concluded seven hours ago, which has not already been said (perhaps well said) of some preceding ones. . . . But in morals, regarded as the rules of life, there is nothing commonplace. Filled with a desire of making new acquirements and a love of novelty, man is generally moving onward in knowledge—there is a law in his very nature which urges him on; but for that which is morally good he has no natural inclination. Before he quit his vicious habits he must be threatened with the horrors of eternal punishment, nay, perhaps made to feel in conviction a foretaste of these horrors. Before he commence a course of virtuous actions, he must be presented with the strongest motives, assurance of eternal peace and joy, and, what is necessarily superior to any motive, he must be powerfully assisted by the Spirit of God. Ah, my dear friend, there can surely be no commonplace in morals, whether by the word we mean virtuous actions, or the precepts which enjoin or the considerations which enforce them. The uncertainty of time and the certainty of death, the guilt and madness of misspending time, and the sure coming of judgment, all of these are topics extremely commonplace for an author, but truths which to every human creature are important in the highest degree. I can not look back upon the past year with a feeling of pleas-

ure, and yet I should look upon it with one of thankfulness. I am certain I have not marked it by a single meritorious deed, and yet, by the good mercy of God, I have been preserved from actions notoriously vicious. I have at times, I trust, by his help, cleared my heart of its viler affections, and repressed its evil desires. I have besought his assistance, and experienced within me the workings of gratitude. But, alas! at other times, I have willfully opened the flood-gates of passion; I have courted rather than resisted temptation; I have apologized for known sin in my heart; and in thought many times oftener than once indeed have I committed evil."

Thus by the "little red flame," in the chill hour before the dawn, on the first day of 1827, does Hugh Miller jot down for his friend his stern and sad communings with himself. The drear glimmer of the lamp light is traceable on the page, and the remarks on the festivities of Christmas and New-Year's day are too harshly puritanic for his sunnier and wiser hour; but the severity of his self-judgment, and the deep and humble piety which pervades the letter, makes it valuable as a revelation of his state of mind at the time. Let us, therefore, proceed:

"In that awful day when things shall appear as they really are, how shall I apologize for the evil I have committed in that portion of time which was measured out by the past year? The more I consider the more clearly do I see that the evil I have committed in it was of a positive, the good merely of a negative, kind. All that I can urge in my defense is, that I might have entered still deeper into evil than I have done. But will this defense serve? Were it to serve in an earthly court, the vilest criminal could with justice allege it; and will God, in whom dwelleth, and from whom cometh, all wisdom, accept it from his creatures? Alas! hope itself can not build on a foundation like this. If mankind have no better plea they are surely lost; yet self-love, in the very face of reason, whispereth the contrary. Ah, William, there can be no greater deceiver than self-love, no flatterer more dangerous, for there is none we suspect less. Often, when we think of a future state of being, of an Almighty Judge, and of our own appearance before him, in our imaginations we not only picture that Judge as merciful, but we even conceive of him as possessed of feelings and partialities, and consequently of weaknesses, like ourselves. We deem him to be One who will look upon our faults with the same favorable eye with which we ourselves regard them, as one who will give us credit for the merits which we think we possess. Alas! we do not consider that one-half of these imagined merits are fictitious, the children of our fancy; and that the other half of them consist of natural talents and propensities which have, for wise ends, been given us, but which we have misapplied. And what, then, remains? As I have said already, I must say again, that man's best plea, if he ground his defense on works, is, that he has not committed all the evil which he might have committed; and I must say again that, if mankind have

no better plea than this, they are surely lost. But, dear William, Christianity is not the cunningly devised fable I once thought it. There is a Savior, and he who believes upon him with that true, earnest belief which conquereth evil, shall, for the sake of the sufferings of that Savior, have his sins forgiven him, and for the sake of his righteousness, be rewarded. I once thought this an absurd doctrine; now, though I have more experience of men and things than I ever had before, and though my reason has strengthened, and is, as I hope, still strengthening, I can regard it as a wonderful display of the wisdom of God.

"Many are the reflections which an opening and a closing year suggest! How impenetrably dark is that cloud which hangs over the future! How dubious and uncertain do the half-remembered incidents of the past appear! And what, since we have so little left us to bear witness of the past—since we have nothing to assure us that in this body, the future shall be ours—what is that present time which we dare challenge as our own? Is it a day, an hour, a minute, a moment? No, it is simply a line of division, a thing which has neither solidity nor extension, breath nor thickness. And is this nonentity all we can call our own? Cowley, in his essay on the danger of procrastination, gives a translation of an epigram of Martial, which, as it falls in with my present train of thought, and is, of itself, very ingenious, I shall here insert. By the by, I recommend Cowley to you as an excellent and shrewd fellow, who, if you court his company and conversation, will, I am sure, give you much pleasure, and, perhaps, some instruction. He is a true poet, though of a rare school. But the epigram:

> "'To-morrow you will live, you always cry;
> In what far country does this morrow lie?
> That 't is so mighty long ere it arrive,
> Beyond the Indies does this morrow live?
> 'T is so far-fetched, this morrow, that I fear
> 'T will be both very old and very dear.
> To-morrow I will live, the fool does say.
> To-day itself's too late; the wise lived yesterday.'

"What is, or where is, to-morrow? is the question of the Roman epigrammatist. I would, in like manner, ask what is, or rather what was, yesterday? It has left a few marks upon the face of the earth. Yesterday a field was plowed, a house built, and a grave dug; and these marks, and scarce any thing else, make yesterday different from the dream of yesternight; but the grave must very soon be closed, the plowed field will soon become a piece of green sward, and to Him with whom a thousand years are as a day, it will appear but a short space when the foundations of the house will become a piece of green sward also. Yet things like these are the monuments of yesterday. But what is yesterday itself? what was it, rather? It was a space of time measured by the sun, which was given to men that in it they might prepare for death; and instead of preparing for

death, the whole power of their bodies and every energy of their souls have been employed in building and plowing, and in other such occupations, even though they saw graves opening and closing before them. What, though those wasting monuments of yesterday which men have raised or inscribed on the face of the earth were eternal—what has the soul of man to do with these external things? If his soul be immaterial, as many judicious philosophers affirm, then, though mysteriously connected with a material body, it can surely have no proper and natural connection with the earth in which vegetables grow, or the stones with which houses are built. But I am quaintly deducing a moral from an uncertainty, which I can simply, and with ease, deduce from a known truth. I am also speaking rather loosely of the particular provision to be made for the soul, and making no allowance for that which must, of necessity, be made for the body. Be it sufficient that I mention the last, since the proportion which the interests of the body bear to those of the soul must be that which finite bears to infinite.

"The particular provision which must be made for the soul is, as I firmly believe, specified in those revealed books which compose the Old and New Testaments. The uncertainty to which I refer is the immateriality of the soul. The truth—the truths I should rather say—which concern the separate existence of the soul and the resurrection of the body, are those of God.

"And now I will just conclude, for I become, though very serious, very tiresome, by remarking that, since time past is little more than a shadow, since time coming is something less, it is man's true wisdom to intrench himself within himself—not in selfishness; it is selfishness which prompts him to wander, and in his wanderings, to form connections with unfit objects—such as earth and stones—not in selfishness, but with a love to God greater, and a love to his neighbor equal to that which he bears to himself, intrenching himself in a good conscience and a rational (that is, a scriptural) hope of salvation, perceiving that to himself his own soul is every thing. And, dear William, is it not truly every thing? All that to us remains of the past lies in the store-houses of our memories, or the books of our consciences; all the surmisings which we form of the future are drawn from the experiences of the past, which we have laid up in these store-houses; while our imaginations sit retired, each in its own recess, drawing pictures of these experiences, and of the images which are preserved along with them, joining or disjoining them at pleasure. Oh, how strange and varied are the powers of that soul which is destined to immortality! It can be made of itself, just as we deal with it, either a heaven or a hell. And now I have done. No, not yet. I must, by quoting Shakespeare, forestall some of your remarks:

"'When I did he
The motley fool thus moral on the '
My lungs began to crow like cha'

That fools should be so deep contemplative;
And I did laugh sans intermission
An hour by his dial.'"

This remarkable letter was not sent away at once. On the 10th of the month Hugh took it up, and added a few words. The "thoughts and modes of expression" seem, he says, as new to him "as if they had been found by some other person." From this he infers that, if he and his two friends made copies of their letters, the volume containing them, if of no great interest to third parties, would be not only interesting but extremely useful to the correspondents. "You may see," he proceeds, "that I am bent on making this experiment." Miller carried out his intention to a very considerable extent, and seems never, while he resided in Cromarty, to have grudged the labor of copying for preservation what he wrote.

Reverting to his letter, he remarks justly that it is "too much in the style which a preceptor would assume," while some of the observations "are commonplace and ill-connected, and others of them unpardonably quaint." He assures Ross that the preceptorial tone is "only in seeming, not in reality," and that he does not suppose his correspondent to be ignorant of any thing he has written. "The blockhead who sets himself up as an adviser of others, is always one who is very far indeed beyond the power of advice to reclaim." By way of practical conclusion to the whole matter, we have the following: "But why, you may ask, why then write me that which I already know? The question, though a simple, is truly a hard one, and I can answer it in no other way than by saying that I wrote from my feelings; that, from seeing the connection which the passing time and my wasting life have together, I was insensibly led to think of time and eternity, life and death, and, as I was, when my mind was thus occupied, writing my friend, to commit these thoughts to paper for his perusal. But besides general there are in these pages particular facts. I have told you that what I now believe I did not once believe, and I have told you how I have determined, relying on the help of God, to make the doctrines of Christianity the rule of my belief—its precepts, that of my conduct. Ah, William, how easy it is to write of virtuous deeds! how difficult to perform them! How easy is it to make a good resolve! how difficult to abide by one! But the power, truth, and goodness of God are infinite, and he has promised to give his Holy Spirit to them that ask it."

From this point, Hugh Miller never receded. A profound change had passed over his spiritual nature, a change none the less penetrating or pervasive that its operation had taken place in the silent chambers of his soul, and had manifested itself in few external signs. Through no paroxysms of self-accusing agony did he make his way into the temple of his spiritual rest. By no raptures of religious enthusiasm did he announce his arrival at his Father's house. With the deliberate assent of reason, conscience, and feeling, he embraced

the Gospel of Christ, and solemnly cast in his lot with those who confessed Christ before men. On this point there was to be no further debate. By one supreme act of resolution he defined the future of his soul's life. Aided, as he reverently believed, by the Divine Spirit, he placed his trust in the power, truth, and goodness of the Infinite One, as revealed in Jesus of Nazareth. But the religion of Miller, though from this time it lay entwined with the deepest roots of his being, and was the supreme and determining element in his character, came little to the surface. It was an unseen force, a hidden fire, influencing him at all moments, but never obtruded on the public eye. It would have been offensive to all the instincts of his modest and manly nature, to unveil the secret places of his soul to the general observer.

The reader may have remarked that, in his letters to Ross, Miller assumes that part of Mentor, which, in the other correspondence, is taken so decisively by Swanson. The influence emanates from Swanson, and Hugh passes it on to Ross. His relations with the latter appear to have been of a more tenderly confidential character than his relations with the former.

MILLER AT TWENTY-SIX—LETTER TO ROSS—THE BLESSING OF A TRUE FRIEND—ROMANCE THE SHADOW OF RELIGION—FORMER AND PRESENT VIEWS OF RELIGION—FREETHINKERS WHO CAN NOT THINK AT ALL—CHRISTIAN THE HIGHEST STYLE OF MAN—PROJECT OF GOING TO INVERNESS.

Hugh Miller, then, as we meet him on the threshold of his twenty-sixth summer, has passed through the stages of boyhood and youth, with their changes of mood and development of faculty, and acquired that fundamental type of character which he subsequently retained. Steadily prosecuting the enterprise of self-culture, he is animated by the purest spiritual ambition, and experiences, in faculties invigorated and knowledge increased, that deep joy which is the student's reward. He has derived, it is scarce necessary to say, inestimable advantage from the completion of that religious process which had long been going on in his mind. The event which he would have called his conversion, and pronounced of transcendent importance in relation to all other occurrences in his life, has taken place. He knows what he believes. The atmosphere of his soul is clear and calm, and the unfathomable azure of heaven touches with softening radiance all its clouds. Placid resolution, energy peacefully fronting the tasks of life, a thoughtful gayety and smiling fortitude, attest the genial firmness with which he now wields the scepter of his mental realm.

In a letter to Ross, dated May, 1828, he writes:

"Religion, my dear friend, is a very different thing from what the people of the world think it. Four years ago I deemed the love of God a passion altogether chimerical. When I looked towards the

sky, I saw that the sun was a glorious and sublime object, and a very apt image of the God who had created it and all things; but I thought I could as rationally love that sun as I could the invisible Being of whom I deemed it the best type. I found what I reckoned admirable things in the writings of Plato. Socrates I regarded as a very excellent, talented man; his reasonings on the immortality of the soul, on the love of God, on prayer, and on the nature of holiness and of man, delighted me. But though I never once thought of bringing forward arguments to weigh against his, I could not consider what he taught in the light of serious truths. I felt the same pleasure in perusing his dialogues, or in reading fine moral poems and discourses, as I felt when looking at an elegant statue or picture; but I thought as little of taking the precepts I found in these pieces as rules to live by as I did of paring my limbs or features to the exact proportions of those of the Apollo Belvidere or the Hercules Farnese. As for the religion of the New Testament, I could not at all admire it. Some of the morals it inculcated I thought good, though in the main rather calculated to make a patient than an active man, and better adapted for the slave and the vanquished than for the freeman and the conqueror. The scheme of Redemption and its consequent doctrines I regarded as peculiarly absurd. I held it impossible that a man of taste and judgment could in reality be a Christian. As for those men who were evidently possessed of both these faculties in a high degree and yet professors of religion, I interpreted their seeming assent to its dogmas as the effect of a prudence similar to that which made Plato, Seneca, and some of the other ancient philosophers, profess a belief in the mythologic fables of Greece and Rome. I was myself an imitator of these men, and I looked upon the professed atheist or deist, not perhaps with as much abhorrence as the serious believer would regard him with, but with a much higher contempt; for it seemed to me a thing childishly imprudent for any one to assume the character of a freethinker, when all to be acquired by opposing the current of what I regarded as popular prejudice was the unqualified hatred and detestation of nineteen-twentieths of one's countrymen and relations. I therefore professed, as you will perhaps remember, a great respect for religion, though always ready to confess to any one who was seriously a Christian that I had no experimental knowledge of its truth. I found the doctrine of predestination very serviceable as a kind of shield to protect me against the advices (you may smile at the term) of such. You may see from what I have written what it was made me think it possible that your profession of respect for religion was insincere, but you will pardon me, as you know how natural it is for a man to judge his neighbor by himself.

"But though misled for once by this method of judging, I shall yet avail myself of it in forming an opinion of that formidable body, the men of the world, so far as their regards for religion are concerned.

My present self takes my former self as a specimen of these men ; ay, and conceit goes so far as to say that former self may be regarded as no unfavorable specimen either. 'Tis true I was not one of the most acute though one of the most prudent of freethinkers. I will not arrogate to myself the powers of a Paine or a Hobbes, yet, setting conceit apart, I think I may say that my natural acuteness and acquired knowledge, at the time I deemed the historical part of the Bible a collection of fables, and its doctrinal a mass of absurdities, were far superior to the acuteness or knowledge of the generality of such men as harbor similar opinions. I mean such of them as think for themselves ; and it is proper to make this distinction ; for I can assure you, however much the men who arrogate a faculty of detecting impostures the rest of the world are deceived by, may boast of the superior power of mind lavished in their sept, that there are blockheads who are skeptics as well as weak men who are Christians, nay, more, that there are men who profess themselves freethinkers who were not born to be thinkers at all.

" The few intelligent skeptics I have been acquainted with, I have invariably found as ignorant of religion as I myself was four years ago, and, from my present knowledge of it, I conclude (and it would be difficult to prove my conclusion false) that all its enemies, even the most acute, are thus ignorant. I have perused the Essays of Hume, one of the best reasoners, perhaps, the world ever produced, and on rising from that perusal this estimate appeared to me juster than ever. Holding this opinion, I can pity these men, but I feel little disposed to fear their arguments, having experience of their futility ; nor yet do I feel uneasy at the thought of being the object of the contempt of such ; for my memory must altogether fail me before I forget that with a contempt similar to theirs I once regarded men well skilled in that wisdom, the beginning of which is the fear of God.

" With the second class, the non-thinkers, it is not so easy to deal. They are so numerous as to compose nearly two-thirds of the inhabitants of our large towns ; and even in our villages and in the country, whose inhabitants, forty years ago, were a superstitious, it may be, but certainly a moral and decent people, they are springing up like mushrooms. Consummately ignorant of religion, and deficient in all general knowledge, they ridicule and defame all those who, professing a belief in the doctrines of the Bible, make its morality the rule of their lives. They are searchers after truth on the plan laid down by my Lord Shaftesbury. Men of the firmest minds find it a hard task to keep themselves cool and undisturbed when made the butts of ridicule. The ridicule of the fool, too, is peculiarly bitter. I have had occasion to feel it at times, having oftener than once come in contact with persons of the stamp described ; and I have felt hurt at finding myself made their butt ; but as there is no character I regard with so much contempt as a coward, I have been solaced at finding, from re-

peated experience, that none except arrant cowards set upon me in this manner. These pusillanimous mockers never venture singly to attack a man. They fight in companies, having no chance if the person they single out be strong in judgment or in humor, unless they can drown his arguments or wit in their laughter. For any two of the fraternity, unless they be more ignorant and stupid than common, I find myself an overmatch. Argument or the sallies of wit confound them. They can do nothing except laugh, and not even that when alone.

"But as I have detailed the opinions which I formerly held of religion at some length, it may not be improper to state, as a *per contra*, a few of those I at present hold respecting it. I have now so far changed my opinion of religion as to think, with a celebrated poet, that Christian is the highest style of man, and that, by the New Testament, men of the greatest powers of mind and the deepest learning may be taught wisdom. Nor can I deem, as I did once, the scheme of morals which this book contains mean and contemptible. I am convinced that, were that scheme universally acted upon, earth would become a heaven; and further, that no one can act upon it unless possessed of the highest and noblest fortitude—a fortitude, indeed, too noble to have any place in the natural human heart, but which God has promised to infuse into the hearts of all such as believe Jesus to be the Christ. As for taste, I can not help wondering how I could at any time be so very absurd as to think the doctrines of Christianity opposed to this principle, especially when I understood and relished the larger poems of Cowper and Milton. Through the Revelation, by which I am taught of all that Christ has done and suffered for sinners, the God whom I would formerly regard with a cold feeling of admiration, I can now love as my God and Father. I feel him brought near to me, and that; too, in a way against which my pride of heart had formerly revolted, and which my reason deemed as unworthy of divine wisdom to devise or of human to trust to.

"This is not merely an avowal of a change of opinion. There is implied in it a change of heart. Though still sinful and foolish in a degree I would be ashamed to confess even to my friends, I trust I am now less selfish and possessed of a more affectionate heart than I was before I believed. My friends are dearer to me than they were formerly, and yet I do not now, as I did once, make their approbation the rule of my actions. I am, perhaps, still too fond of praise from such of my fellow-men as I respect and love, but I find that my desire of avoiding that which is bad and dishonorable follows me into solitude, and that my belief in God's omnipresence (may I not hope the assistance of a spirit also?) gives me strength to accomplish this desire. But you will not be satisfied, if I run on in this strain to the end of my letter. Let me close this part of it, then, in the words of one of the many texts which point out the principle upon which the change I have been describing hinged: 'Whosoever believeth that

Jesus is the Christ, is born of God.' Mark what follows: 'Whosoever is born of God overcometh the world.' . . . . . Rousseau was certainly in the right when he said that the art of writing well was of all others the most difficult to acquire. I have been wishing, ay, and striving, too, as hard as my indolent, volatile nature suffered, for these three years past to acquire this art; and all I have yet attained is an ability of detecting my mistakes and of seeing how incorrect my modes of expression are. . . . . "There is a general stagnation in this part of the country in all kinds of trade. The season favorable to my department is fast advancing, but, except two tombstones (and one of these is not yet finished), I have done nothing this year. I have some thoughts of putting into execution a plan which has been revolving in my mind these several months back. I engrave inscriptions on stone (conceit apart) in a neater and more correct manner than any other mason in this part of the country. The masons of Inverness, as I have been informed, are very deficient in this art. My plan is to go to that town, take lodgings in some cheap part of it, and make myself known by advertisement as a stone engraver. What think you of this? The want of friends and of a due confidence in one's self are, it is true, disqualifying circumstances, but time and chance happeneth to all."

SEEKS WORK IN INVERNESS—RESOLVES TO PRINT HIS POEMS—MAKES THE ACQUAINTANCE OF MR. CARRUTHERS—CORRECTS PROOF-SHEETS OF HIS POETRY, AND DECIDES THAT IT IS POOR—RETAINS INFLEXIBLY HIS FIRST OPINION OF ITS MERITS, AND RESOLVES TO CULTIVATE PROSE—DEATHS OF UNCLE JAMES AND OF WILLIAM ROSS—DEDICATION OF HIS POEMS TO SWANSON.

The plan of seeking work in Inverness, which he carried into effect in the course of the summer, had important consequences, but they proved to be by no means of the kind he anticipated. Miller resolved to print his poems on his own account. He thus formed the acquaintance of Mr. Robert Carruthers, editor of the "Inverness Courier," and the acquaintance ripened rapidly into a friendship which continued during the life of Hugh Miller. With that critical acumen which all the world has learned to acknowledge in the biographer of Pope, Mr. Carruthers discerned the originality and worth of Miller, and though he came in the guise of a stone-mason, shy, taciturn, ungainly, with a quire of rugged verses in his pocket, admitted him at once to the enjoyment of that equality and that fraternity which have from of old prevailed in the republic of letters. Miller had indeed made a notable acquisition, and he did not fail to appreciate it. The perfect judgment, the perfect temper, the literary sympathy, not less intelligent than warm, the indestructible cordiality, unchilled by forty years' editorial experience, which have endeared Mr. Carruthers to thousands from London to Inverness, won his con-

fidence and his heart. To his dying day there was no newspaper which he read with half the interest with which he hung over the "Inverness Courier."

Soon his poems began to be put into his hands in a form which, though he probably had them by heart, made them nevertheless new to him, to-wit, in print. The effect was memorable. His critical faculty realized with startling and painful, but quite convincing, vividness, that they fell far below the mark of good English poetry. Hugh Miller was hardly one of those who "can hear their detractions and put them to mending," for his pugnacity always awoke when he was attacked; but he was one of a class perhaps still smaller, who can estimate their own performances with austere justice, and abide by that estimate in the face of contemptuous disparagement on the one hand, and the most ingenious and plausible encomiums on the other. The "Poems written in the Leisure Hours of a Journeyman Mason," met with a success which, had Miller been a rhyming artisan of the ordinary caliber, would have turned his head. Issued from a newspaper office in the north of Scotland, they were recognized as imbued with true excellence in periodicals of the first order, and by critics of culture and authority. The "Lines to a Sun-dial placed in a Church-yard" were quoted in magazine and newspaper throughout the length and breadth of the United Kingdom, and the author was assured that they displayed "a refinement of thought, an elegance and propriety of language, that would do honor to the most accomplished poet of the day." Had Miller *not* had the making of a poet in him, the like of this would have led him at once to exhalt his horn as a prodigy of genius, too fine to work at his craft, who had only to put his name to a copy of verses to make them immortal, and whom the human species were bound to supply with the necessaries of life gratis. The plaudits profoundly gratified Miller, but did not move him a hair's breadth from the Rhadamanthine sternness of his judgment on himself, or shake in his bosom "that serene and unconquerable pride which no applause, no reprobation, could blind to its shortcoming or beguile of its reward."

The question may be gravely put, whether he did not err in determining, as he did, to abandon poetical composition and devote himself, for a time at least, to prose.

It was within the capacity of Miller to produce reflective and descriptive poetry equal to any in the English language. On the other hand, he fell short both in lyrical passion and dramatic sympathy, and his imagination, though powerful, was cold. His ear, too, may have been naturally better fitted to the modulation of prose than of verse. It is bootless to speculate on the subject. The army of the Muses is like that of Gideon. All who are fearful or afraid, all who do not serve for life or for death, not only may but must quit it; and Miller was critic enough to know the "intolerable severity" of Apollo. Some of our most eminent writers, Mr. Carlyle and Mr. Ruskin, for

instance, would maintain that, in deliberately abandoning verse, amid the acclamations which greeted his earliest efforts, Hugh Miller presented an example which specially deserves to be followed, and gave one of the noblest proofs afforded by his career of sterling ability and massive sense.

From the ideal woe of perceiving for the first time that he stood at an immeasurable distance below the great masters of English poetry, he was recalled to the hard reality of grief by the intelligence that his Uncle James had died; and, on proceeding to Cromarty in consequence of this intelligence, he learned that William Ross also was no more. Uncle James, as we well know, had been as a father to him; or rather as one among ten thousand fathers; for, if the affection with which he regarded his nephew was as that of a tender parent, the counsel, the example, the sympathetic forbearance, the just appreciation, which Miller experienced at his hands, were such as the fewest parents can bestow. From Uncle James, as by a fine moral contagion, Hugh derived that proud integrity, that sensitive honor, in money matters, which was with him, as with Burns, a passion.

The death of Ross touched him keenly. Among his early friends Swanson had his deepest respect, but the tenderest of his friendships was with Ross. Of him alone among his boyish companions did Miller speak as possessed of genius, and we have seen enough to prove that his estimate was not extravagant. Ross could sympathize with much which elicited no response from the Puritan rigor of Swanson, and with his delicate feeling for beauty were combined a feminine gentleness and depth of affection which greatly endeared him to Miller. "My hope of salvation is in the blood of Jesus. Farewell, my sincerest friend." These were the closing words of William Ross's last letter to Miller.

The Journeyman's Poems were dedicated to John Swanson, the name disguised in asterisks. In a dedicatory epistle to his friend, written in prose, Miller declares him to be "the best scholar and truest philosopher he ever knew," and avows his gratitude to him for "having convinced one who possibly might have done some mischief as an infidel, that the Religion of the Bible is not a cunningly devised fable." Of his own book, he ventures to state the opinion, "that a spirit of poetry may be found in it, wrestling with those improprieties of language consequent on imperfect education, just as the half-formed animals of the Nile, that are warmed into life by the beams of the sun, struggle to free themselves from the mud and slime in which they are enveloped." He virtually takes upon himself the blame, however, of whatever defect of education the volume may display, confessing that, in the present age, "ignorance implies rather want of mind than want of opportunity for cultivating the mental faculties." True words; and specially brave and modest from the lips of a poetical mechanic.

RESUMES WORK AS A STONE-CUTTER AT CROMARTY — INTIMACY WITH MR. STEWART—THE LITERARY LION OF THE PLACE—WRITES FOR THE "INVERNESS COURIER"—LETTERS ON THE HERRING FISHERY — EXTRAORDINARY SHOAL OF HERRINGS—A NIGHT ON GUILLIAM — EMIGRATION OF HIGHLANDERS TO CANADA—SCIENCE AT LAST.

Having committed the body of Uncle James to the grave, and piously recorded on his tombstone that he had "lived without reproach and died without fear," Miller did not return to Inverness, but resumed his employment in the church-yards of Cromarty. The publication of his poems was sufficient to make him a person of some importance in his native town. He associated himself with the better portion of its inhabitants, those who combined a moderate liberalism of political opinion with literary or scientific tastes and strong religious principles. His acquaintance with the Rev. Mr. Stewart, which had formerly been slight, now deepened into intimacy, and no sooner had he an opportunity of knowing Mr. Stewart well, than he conceived for him the highest esteem, and dismissed forever from his mind, as the mere fruits of misunderstanding, what he had formerly fancied to the disadvantage of his minister. Miller's profession of religion, also, was more decided than formerly, and he began to teach in the Sunday-school. Hewing under sunny skies on the chapel brae, he often finds Mr. Stewart or some intelligent friend stealing to his side to give and take an hour's conversation, and sometimes his visitors are of the fair sex. The journeyman mason has become the literary lion of Cromarty.

But "nature's noblest gift" to Miller, his "gray goose-quill," has not been laid aside. Turning his attention to prose, and availing himself of the columns of the "Inverness Courier," which his friend Carruthers gladly throws open to him, he writes, in the summer of 1829, five letters on the Herring Fishery, which, "in consequence," said Mr. Carruthers, "of the interest they excited in the Northern Counties, and in justice to their modest and talented author, were issued in pamphlet form in September of the same year. They are written with much vivacity, and abound with pertinent remarks and fine descriptive passages.

These letters were fitted to interest many to whom the poems of the journeyman mason would be a sealed book. Whatever might be his rhyming capabilities, the Cromarty mason was clearly a man of sense and talent. The circle of his friends and admirers continued, therefore, to widen. In character of occasional correspondent, he contributed items of news and occasional articles to the "Inverness Courier." These are admirably done, and in some of them we detect impressions and opinions cherished by Miller to the last.

Among the latest of these contributions to the "Inverness Courier" is one helping us to trace one of the most interesting stages in Mil-

ler's intellectual history, namely, the transfer, of his enthusiasm and ambition from literature to science. A short newspaper article on crab-fishing marks the point at which the stream of scientific acquirement which had long, with gathering volume, been flowing underground, rose to the surface. Miller writes as one who has from infancy been familiar with the natural objects and appearances of the Cromarty beach, and who had not written about them sooner merely because it did not occur to him that they could afford occupation to his pen. He does not yet adopt a scientific nomenclature; but he describes natural objects with exquisite precision and lucidity, and dwells upon details of structure which the mere literary sketcher or anecdotic sportsman would have regarded with indifference. He has learned also to contemplate, not in vague wonder but with reverent and delicate appreciation, the mystery and miracle of God's work in nature. "I am confident," he says, in concluding a description of the sea-urchin, "that there is not half the ingenuity, or half the mathematical knowledge, displayed in the dome of St. Peter's, at Rome, or St. Paul's, at London, that we find exhibited in the construction of this simple shell."

MILLER AND HIS NEW FRIENDS—INTRODUCED TO PRINCIPAL BAIRD—WILL NOT GO TO EDINBURGH FOR THE PRESENT—HIS POEMS DO NOT SELL—WILL NOT RELINQUISH LITERARY AMBITION.

Additions were made to the previously limited number of Miller's friends and acquaintances, occasioned by the publication of his poems. It is in no ordinary degree pleasing to observe the friendliness which he experienced from persons greatly his superiors in social position, and the manner in which that friendliness was responded to by him. On the one hand, there was cordiality without the faintest trace of the "insolence of condescension;" counsel and furtherance of every kind to the utmost limit permitted by genuine respect, and by sympathetic apprehension of what a sensitively proud and independent nature required; unfeigned recognition of his intellectual rank, and of the title it gave him to be treated as a gentleman. On the other hand there was perfect appreciation of all this; gratitude not for patronage to the mechanic, but for fellowship and sympathy with the man; independence not petulantly insisted upon, not obtrusively displayed, but quietly, unaffectedly, almost unconsciously worn as habit of soul and principle of deportment. Principal Baird, at this time one of the most eminent ministers of the Church of Scotland, was among the first to stretch out a friendly hand to the Cromarty poet. Miller was introduced to him in Inverness by Mr. Carruthers, shortly after the appearance of the poems, and Baird suggested that he should draw up that account of his education and opinions which has been so frequently mentioned. The first part of the narrative was soon ready, and Miller dispatched it in the

autumn of 1829, to Baird in Edinburgh. He took occasion at the same time, to thank Baird for "the very favorable critique" on the poems which had appeared in the "Caledonian Mercury." The critique in question had been written by Dr. James Brown, working editor of the "Encyclopædia Britannica," and Baird hastens to declare that he "had no hand whatever, directly or indirectly," in its publication. "But you say nothing," adds Baird, "in your letter as to my suggestion, when at Inverness, of giving your busy hours to your profession here during the ensuing winter, and your leisure hours to reading books, and plying your pen, and extending your acquaintance with the living as well as the dead world of literature." These words occur in a letter dated November 24, 1829. We have Miller's reply, bearing date the 9th of the following December: "From my engagements here and at Inverness, I can not avail myself of your kind invitation to spend the winter at Edinburgh, but I appreciate its value, and feel grateful for your kindness. My acquaintance with the dead world of literature is very imperfect, and it is still more so with the living; instead, however, of regretting this, I think it best to congratulate myself on the much pleasure which, from this circumstance, there yet remains for me to enjoy. If I live eight or ten years longer, and if my taste for reading continues, I shall, I trust, pass through a great many paradises of genius. Half the creations of Scott are still before me, and more than half those of every other modern poet. But though I can appreciate the value of an opportunity of perusing the works of such authors, there are opportunities of a different kind to be enjoyed in Edinburgh, which, from a rather whimsical bent of mind, I would value more highly. My curiosity is never more active than when it has the person of a great man for its object; nor have I felt more delight in any thing whatever than in associating in my mind, when that curiosity was gratified, my newly acquired idea of the personal appearance of such a man with the ideas I had previously entertained of his character and genius. When I resided in the vicinity of Edinburgh, I have sauntered for whole hours opposite the house of Sir Walter Scott, in the hope of catching a glimpse of his person; and several times, when some tall, robust man has passsed me in the streets, I have inquired of my companions whether that was not Professor Wilson. But, perhaps I am more ambitious now than I was five years ago. Perhaps I would not be satisfied with merely seeing such men, and I am aware that I have not yet done any thing which entitles me to the notice of the eminent, though in one instance, I have been so fortunate as to attain it. I must achieve, at least, a little of what I have hoped to achieve before I go to Edinburgh. But even this intention must not be followed up with too great eagerness. Ortogrul of Basra, after he had surveyed the palace of the vizier, despised the simple neatness of his own little habitation. I must be careful lest, by acquiring too exclusive a bent towards literary pursuits, I contract a distaste for

those employments which, though not very pleasing in themselves, are, in my case, at least, intimately connected with happiness. I do not think I could be happy without being independent, and I can not be independent except as a mechanic."

The friendliness both of Dr. Baird and of Mr. Carruthers was too genuine to permit indulgence in the cheap flattery of bidding Miller abandon his trade and launch into the perils of a literary life; and he had the manliness and sense to appreciate their discretion while valuing their applause.

"With respect to literary pursuits," he says, "I have every claim to be regarded as one of the *incurables* mentioned by Goldsmith. At this moment I am as determined upon improving, to the utmost, my ability as a writer as I could have been, had the public, by buying my work, rendered the speculation a good one. With only my present ability to judge of my own powers, the event can alone determine whether, when I have attained the art of writing, I shall succeed or fail in making myself known. But could I decide whether I possess or be devoid of true genius, it would be an easy matter for me to anticipate the result. If destitute of this spirit, I shall certainly not rise to eminence; for my situation in life is not one of those in which fortune or the influence of friends can supply the want of ability, or in which mediocrity of talent can become admirable by clothing itself in the spoils of learning. My education is imperfect; I can not even subsist except by devoting seven-eighths of my waking hours to the avocations of a laborious profession; and I have no claim from birth to either the notice of the eminent or the patronage of the influential. But if nature has bestowed upon me that spirit of genius which ultimately can neither be repressed nor hidden, then, though fortune should serve me as Jupiter did Briareus when he buried him under Etna, I shall assuredly overturn the mountain."

MISS FRASER—HER PARENTAGE, RESIDENCE IN EDINBURGH, POSITION IN CROMARTY—SOCIETY OF THE PLACE—MILLER'S MANNER AND APPEARANCE—A FASCINATING COMPANION—HE AND MISS FRASER BECOME LOVERS — GLIMPSES OF ROMANCE — METAPHYSICAL LOVE-MAKING—A NEW AMBITION AWAKES IN MILLER—FABLE OF APOLLO AND DAPHNE REVERSED—LETTER TO MISS FRASER—AND TO MRS. FRASER.

In the summer of 1831, Hugh Miller first saw Miss Lydia Mackenzie Fraser. About a year before, when residing with relations in Surrey, this young lady had received a letter from her mother, in which, among other descriptive touches relating to Cromarty, occurred the following: "You may guess what are its literary pretensions, when I tell you that from my window at this moment I see a stone-mason engaged in building a wall. He has just published a volume of poems,

and likewise letters on the herring fishery; both of which I now send you." Miss Fraser was quick, intelligent, interested in literature; this announcement naturally excited her curiosity. On coming to Cromarty she did not for some time see the poetic stone-mason, and, when she did, he was not aware that her eyes rested on him. She and her mother had stepped in to have a look at a school recently opened on "the brae-head" of Cromarty, when a man entered, looking like a working-man in his Sunday dress, who, as a whisper from her mother informed her, was Hugh Miller. She was struck by the deep thoughtfulness of his face and by the color of his eyes, "a deep blue, tinged with sapphire." The first occasion on which, for his part, he heard her name, and cast an attentive glance upon her features, was that which is described in the "Schools and Schoolmasters." He was talking with two ladies beside a sun-dial, which he had set up in his uncle's garden, when she "came hurriedly tripping down the garden walk" and joined the group. "She was," he adds, "very pretty; and, though in her nineteenth year at the time, her light and somewhat *petite* figure, and the waxen clearness of her complexion, which resembled rather that of a fair child than of a grown woman, made her look from three to four years younger." Evidently, though he saw her but for a few minutes, and did not exchange a word with her, she made an unusual impression upon him.

The probability, in fact, was, that this young lady would form an important addition to the circle of his acquaintance, and to that of the intellectual "upper ten" in Cromarty. Both beauty and talent had been among the attributes of the stock from which she sprung, The "lovely Barbara Hossack," and several other women noted in the Highlands for their personal attractions, had been of her ancestry on the female side; Provost Hossack, of Inverness, trusted friend of President Forbes and honored intercessor with the Duke of Cumberland for the vanquished of Culloden; Mr. Lachlan Mackenzie, famed Highland preacher, of whom tradition in the northern Scotch counties has much to report; and the Mackenzies of Redcastle, "said to be the most ancient house in the north of Scotland," had been among her kindred in the line of male descent. Her father, notably handsome in youth, and famous in Strathnairn as a deer-stalker, entered, later in life, into business in Inverness, and was at first prosperous, but, being generous and unsuspecting to a fault, was robbed by a clerk and beguiled by a relative, and at last overborne by disappointments and difficulties.

After the death of Mr. Fraser, his widow, possessing some small property of her own, went to live in Cromarty. His daughter had been taken away by relatives in Surrey when his affairs were getting into confusion. She had received the best education obtainable at the time by young ladies. Having resided in Edinburgh in the house of Mr. George Thomson, the correspondent of Burns, she had had the benefit not only of being instructed by Edinburgh masters, but of

being introduced to a singularly pleasant and rather distinguished circle of society. George Thomson attracted to his musical parties the most skillful and enthusiastic votaries of Scottish music in Edinburgh. Nor were literature and art unrepresented at those gatherings. Scott himself, never out of his element when kindness and intelligence ruled the hour, had appeared sometimes among Thomson's guests, though this was before Miss Fraser became an inmate of his dwelling. James Ballantyne and his brother Alexander were frequently of the number. James had the gift of singing "Tullochgorum" with rough heartiness. Alexander was an exquisite violinist. Pieces from Beethoven, Mozart, and their compeers, were performed at those parties, Thomson's preference for Scottish music by no means rendering him insensible to the claims of other schools. Thomson, of Duddingston, who, when clear and unapproached pre-eminence has been allowed to Turner, must be placed high among the landscape painters, not only of Scotland but of Great Britain, was sometimes present, attracted, perhaps, by the original portrait of Burns, by Nasmyth, or Wilkie's Auld Robin Gray, both of which adorned George Thomson's drawing-room. Mrs. Grant, of Laggan, and Tennant, of "Anster Fair," figured among the literary celebrities.

A young lady, of great natural ability, accustomed to polite society in Surrey, and advantageously educated and introduced in Edinburgh, would be likely to shine in the intellectual circle of Cromarty. For a very small town, Cromarty was happy in the quality of its inhabitants. The Rev. Mr. Stewart was the central star in its social firmament, his supremacy beginning about this time to be disputed by Miller. Not that there was any thought of rivalry or jealousy on either side; they were the closest and most faithful friends; but that the reputation of Miller even in its dawn shot its rays to a wider horizon than had as yet been reached by Mr. Stewart's, and that the culture of the minister was, in all save theological reading and grammatical knowledge of Greek and Latin, narrower than that of the parishioner. A colonel, a captain, both intelligent beyond the average of their class, with ladies to match, a banker, who had been an officer in the navy, and retained professional enthusiasm enough to make him study naval history until he became a walking encyclopædia of information on sea-battles—these, with a variety of studious and accomplished ladies, eminent, some for Calvinistic metaphysics, some for geological predilections, made up the cluster of notabilities which circled round Alexander Stewart and Hugh Miller, the Duke and the Goethe of this miniature Weimar. The women had their full share of the intellect of the place, or more. "By much the greater half of the collective mind of the town," says Miller in one of his letters, "is vested in the ladies." It speaks for the sterling worth as well as the intellectual penetration of the Cromarty notables, that they welcomed to a footing of perfect social equality the man who was to be seen any forenoon, bare-armed, dusty-visaged, with mallet in hand

and apron in front, making his bread by cutting inscriptions in the church-yard. With Miller any intercourse but that of perfect equality would have been impossible. Diffident in company as he was, his pride was as inflexible as that of Burns, and, if possible, more sensitive. The slightest trace of condescending patronage would have driven him away, and forever. The colonels and captains who were to be found in country towns at this period were generally men of the French war, men who had seen enough of life and action to bring out the stronger lines of their character, men frank of bearing, direct of speech, and perfectly brave. In the Highland towns they were likely to be cadets of old Highland houses. Constitutional fondness for war, concurrently with shallowness of the paternal purse, had led many such into the army. Pride as well as courage was likely to be hereditary with these military gentlemen, and it is, I repeat, to the credit of those of Cromarty that they recognized Miller for what he was, a man qualified to adorn and delight any circle.

Once the singularity of admitting a stone-mason to social fellowship was got over, the charm of Miller's acquaintance would secure his footing. All who knew him with any degree of intimacy have testified to the fascination of his presence. For women in particular his manner and conversation had an exquisite charm. The leonine roughness of his exterior, the shaggy hair, the strong-boned, overhanging brows, the head carried far forward, and shoulders bent as with brooding thought, the working-man's gait and gesture, lent the enchantment of a delicate surprise to the deep gentleness which they disguised. Never was the difference between the conventional gentleman and the true gentleman—the possibility that one may be every inch a true gentleman and yet every inch *not* a conventional gentleman—more signally illustrated than in the case of Miller. A fine and tender sympathy, the soul of politeness, enabled him, spontaneously, unconsciously, to feel with every feeling, to think with every thought, of the person with whom he conversed. The faculty of skillful and kindly listening is rarer even than that of fluent and brilliant talk, and Miller had it in fine perfection. He had, however, the gift of captivating speech as well. His conversation, though never voluble, impulsive, precipitate, exhibited the action not only of a powerful but of an educated intellect, practiced in logic and trained to the expert use of its linguistic instruments. He never was at a loss for an idea, never at a loss for a word, and the stores of his memory afforded him an exhaustless supply of illustration from what he had seen in nature or read in books. There was a pensiveness, also, in his tone, a profound sadness in his eye, a touch of egotistic melancholy about him, which is a spell of absolute inthrallment for most women, and, indeed, for most men. "The bewitching smile," says Mr. Disraeli, "usually beams from the grave face. It is then irresistible."

Miss Fraser, as we should have expected, was not without admirers of the other sex at the time when she formed the acquaintance of

Hugh Miller. They were "younger and dressed better" than the stone-mason, and had chosen "the liberal professions." But no man has so strong an attraction for a superior girl as a man of brains, and Miller's seniority of ten years was in his favor rather than the reverse, in the contest with more juvenile rivals. Miss Fraser, meeting him here and there in society, was interested by his conversation. On sunny forenoons, she might pause in her walk to have a chat with him in the church-yard. On which side the friendship first glowed into a warmer feeling need not be determined; probably they became lovers almost simultaneously; and it is certain that this his first and last love took entire possession of Miller's heart.

A number of materials,—letters of the period, memoranda, note-books,—illustrative of this part of the history, have come into my hands, and from these I have selected at my own discretion, and on my own responsibility. Here is a glimpse of him from an authentic source, when he seems to have been already pretty far gone: "One evening we (Miss Fraser and Hugh Miller) encountered each other by chance in a wooded path of the hill, above which slope a few cultivated fields skirted by forest. Hugh Miller prevailed on me to accompany him to a point which commands a fine view of the frith and surrounding country. We sat down to rest at the edge of a pine wood, in a little glade fragrant with fallen cones, and ankle-deep in the spiky leaves of the firs. I sat on the stump of a felled tree. He threw himself on the ground, two or three yards from my feet. The sun was just setting, and lighted up the pillared trunks around with a deep, copper-colored glow. Hugh took out a volume of Goldsmith. When did he ever want a companion of that description? He read in a low voice the story of Edwin and Angelina. It was then I first suspected that he had a secret which he had not revealed."

Things had reached this rather critical posture, when Mrs. Fraser, alarmed at the notion that her daughter might bestow her heart and hand on a mechanic, commanded that the intimacy should be broken off. The young lady was disconsolate; wept much; felt "like a poor little parasite which had succeeded in laying hold of some strong and stately tree, and which a powerful blast had laid prostrate in the dust." Under these circumstances the following entry from the same hand will not seem surprising:

"It was late on the evening of a very hot summer Sabbath during the time of interdict, that, feeling listless and weary, I crept out a little to breathe the air. I had no intention of walking,—did not even put on bonnet or shawl. I stole down the grassy garden-path and listened to the murmur of the sea, whose waves beat on the shore at a stone's throw beyond. But the night was still sultry, and I imagined that, by getting to the top of some eminence, I might find the cooling breeze for which I longed. So I found myself, I scarcely knew how, at the ancient chapel of St. Regulus. There the trees

which line the sides of the ravine by which it is surrounded waved the tops of their branches, the blue sea looked forth between, and as the twilight gave place to night the stars began to twinkle forth. I stood on the edge of the hill enjoying the slight breeze and the soft brightness of earth and sky, when suddenly I perceived that Hugh stood beside me. He spoke of the sweetness of the evening, the beauty of the landscape, and so on; but his speech was cold and reserved, and he made no allusion to our peculiar position. Possibly his pride was touched by it. At that very time, however, as he afterwards told me, he cut a notch in the wood of a beam which crossed the roof of his cottage for every day on which we had not met. He stayed but a short time there, leaving me standing just where he had found me; but there was no notch on that day. I on my part knelt at a cold grave-stone, and registered over the dead a vow, rash and foolish perhaps; but it was kept."

From these suggestive glimpses, readers of imagination and sensibility will gather all the information that is necessary upon the subject. This love affair was clearly romantic, but not the less real on that account. A judicious mother, reflecting probably that young ladies of nineteen are not likely to cease to love for being told to do so, removed the interdict, and though marriage was for the present to be considered as out of the question, the young people were permitted to enjoy each other's society.

It would be a mistake to suppose that the intellectual benefit of their intercourse was entirely on the side of the lady. Her mind, if not so well stored, so deliberate, so patiently thoughtful, as that of her lover, had the piercing clearness and acuteness of good female intellect, and would sometimes strike direct to the heart of a subject when circumspect and meditative Hugh was gyrating round and round it. On one occasion, for example,—one probably of many,—the pair had enjoyed a game of chop-logic *àpropos* of that venerable problem, the origin of evil. Miller's argument, as placed before Miss Fraser, I can not state in his own words, but its substance is derivable from a letter of his to Miss Dunbar, of Boath. "May not evil," suggests Hugh, who, however, pronounces the question, in the essence of it, unanswerable, "be the shade with which good is contrasted that it may be known as good, the sickness to which it is opposed as health, the deformity beside which it is shown forth as beauty? Nay, may it not be affirmed that the plan of the Deity would not have been a perfect one if it did not include imperfection, nor a wise one if it admitted not of folly, nor a good one if evil did not form a part of it? Is there not something like this implied in the remarkable text which informs us that the weakness of God is mightier than the strength of men, and his foolishness more admirable than their wisdom?" All which plausible balancing of advantage and disadvantage, Miss Fraser brings front to front with the sheer mystery of pain. "Allowing," she writes, "that the actual contrast between good and

evil, ease and suffering, increased our value for the ease and the good, how reconcile with our ideas of justice the fact that there are thousands born to suffer continual pain, and to be depraved forever? Two thousand gladiators once lay expiring in the Roman Ampitheater, but does it reconcile us to the fact that hundreds of thousands of spectators were delighted with the scene? This metaphysician, for all her *petite* figure, waxen clearness of complexion, and child-like appearance, has not, to my knowledge, received a satisfactory answer to her question either from Hugh Miller or any one else. Such a lady-love was capable of furnishing intellectual diamond dust of very superior quality for the sharpening of a man's wits.

Miss Fraser's intercourse with Miller—the relation in which he was now placed with her—was beneficial to him in another way. It broke up the theory of life which he had formed for himself, and replaced it by one of a more masculine character. Profoundly imbued as he was with the ambition of self-culture, and loving praise with the ardor of a born literary man, he was nevertheless firmly persuaded that, in the rank of mason, in the town of Cromarty, he could enjoy as much happiness as it was possible for him to enjoy on earth. A wife, he thought, he could dispense with; no passion, except the passions of the mind, had ever seriously moved him; and though he took special delight in conversation with clever women, he could have that conversation without marriage. He would ply the mallet in the summer days; he would owe no man a sixpence; he would read his favorite books in the evenings of June, and the short days of December; he would train himself to ever-increasing vigor and grace of style, and would write with the fresh enthusiasm of one for whom literature was its own reward. Thus was he contented to live and to die; the world, it was his inflexible conviction, had nothing better than this to offer him. If the question were simply of more or less happiness, it would be difficult to prove that in all this he was wrong. The quality, however, of the happiness would not have been the highest, and he might have awakened from his idyl of intellectual luxury to the consciousness that, in evading the pains of action, he had missed the sternest, but the noblest joys of life. When Miss Fraser taught him to understand the love-poetry of Burns, as he expressly says she did, he bade adieu forever, though not without a sigh, to the tranquil hopes which had hitherto inspired him. He told Miss Fraser that she had spoiled a good philosopher, and it was with no exultation, though with calm and fixed resolution, that he felt the spirit of the philosophic recluse die within him and the spirit of the man arise. The classic fable was reversed. Daphne overtook and disenchanted her lover. Miller awoke from the dream which was stealing over him; the roots which had already struck deep into his native soil, and which promised to bind him down to a mild, tree-like existence on the hill of Cromarty, were snapped asunder; a stronger circulation swept in fierce thrills along his veins; and with

new hope, new ambition, new aspiration, he girded up his loins for the race of life. Hitherto, "he professed just what he felt, to be content with a table, a chair, and a pot, with a little fire in his grate, and a little meat to cook on it." He professed such contentment no longer; for himself he could have lived and died a working-man, but he could not endure the idea of his wife being in any rank save that of a lady.

Habitually self-conscious, observant of every event in his mental history, Miller did not fail to mark the change which had passed over him. In a letter written in the summer of 1834, he describes it with grace, naïveté, and lightness of touch, to her who was its cause. The first part of the letter is unimportant, but it may as well be inserted for the illustration it affords of his simple and pleasurable mode of life in Cromarty at this period:

"CROMARTY, Wednesday, 12 o'clock.

"I am afraid you are still unwell. Your window was shut till near ten this morning, and, as I saw no light from it last evening, I must conclude you went early to bed. How very inefficient, my L——, are the friendships of earth! My heart is bound up in you, and yet I can only wish and regret, and—yes, pray. Well, that is something. I can not regulate your pulses, nor dissipate your pains, nor give elasticity to your spirits; but I can implore on your behalf the great Being who can. Would that, both for your sake and my own, my prayers had the efficacy of those described by simple-hearted James!* They are sincere, my L——, when you form the burden of them, but they are not the prayers of the righteous. . . .

"My mother, as you are aware, has a very small garden behind her house. It has produced, this season, one of the most gigantic thistles, of the kind which gardeners term the Scotch, that I ever yet saw. The height is fully nine feet, the average breadth nearly five. Some eight years ago I intended building a little house for myself in this garden. I was to cover it outside with ivy, and to line it inside with books; and here was I to read, and write, and think all my life long; not altogether so independent of the world as Diogenes in his tub, or the savage in the recesses of the forest, but quite as much as is possible for man in his social state. Here was I to attain to wealth, not by increasing my goods, but by moderating my desires. Of the thirst after wealth I had none—I could live on half a crown per week, and be content; nor yet was I desirous of power—I sought not to be any man's master, and I had spirit enough to preserve me from being any man's slave. I had no heart to oppress; why wish, then, for the seat or the power of the oppressor? I had no dread of being subjected

*"The effectual, fervent prayer of a righteous man availeth much."—James v. 16.

to oppression; did the proudest or the loftiest dare infringe on my rights as a man, there might be disclosed to him, perchance,

"'Through peril and alarm
The might that slumbered in a peasant's arm.'

"Even for fame itself I had no very exciting desire. If I met with it in quest of amusement, well; if not, I could be happy enough without it. So much for the great disturbers of human life,—avarice and ambition, and the thirst of praise. My desires were not tall enough to penetrate into those upper regions which they haunt; I was too low for them, and for the inferior petty disturbers of men's habits I was certainly too high. Love, for instance, I could have nothing to fear from. I knew myself to be naturally of a cool temperament; and, then, were not my attachments to my friends so many safety-valves? Besides, no woman of taste could ever love me, for I was ugly and awkward; and as I could love only a woman of taste, and could never submit to woo one to whom I was indifferent, my being ugly and awkward was an iron wall to me. No, no, I had nothing to fear from love. My own dear L——, only see how much good philosophy you have spoiled. I am not now indifferent to wealth or power or place in the world's eye. I would fain be rich, that I might render you comfortable; powerful, that I might raise you to those high places of society which you are so fitted to adorn; celebrated, that the world might justify your choice. I never think now of building the little house, or of being happiest in solitude; and if my life is to be one of celibacy, it must be one of sorrow also,—of heart-wasting sorrow—but I must not think of that."

One other letter upon this subject we must not omit. It was addressed by Miller to Mrs. Fraser:

"CROMARTY, November 2, 1833.

"MY DEAR MADAM:—I trust ingratitude is not among the number of my faults. But how render apparent the sense I entertain of your kindness in so warmly interesting yourself in my welfare? Just by laying my whole mind open before you. Two years ago there was not a less ambitious or more contented sort of person than myself in the whole kingdom. I knew happiness to be altogether independent of external circumstances; I more than knew it,—I felt it. My days passed on in a quiet, even tenor; and though poor, and little known, and bound down to a life of labor, I could yet anticipate, without one sad feeling, that in all these respects my future life was to resemble the past. Why should I regret my poverty? I was independent, in debt to no one, and in possession of all I had been accustomed to regard as the necessaries of life. Why sigh over my obscurity? My lot was that of the thousands around me; and, beside, was I not born to an immortality too sublime to borrow any of its grandeur or

importance from the mock immortality of fame? Why repine because my life was to be one of continual labor? I had acquired habits of industry, and had learned from experience that, if labor be indeed a curse, the curse of indolence is by far the weightier of the two. It will not surprise you, my dear madam, that, entertaining such sentiments, I should have used no exertions, and expressed no wish, to quit my obscure sphere of life for a higher. Why should I? I carried my happiness about with me, and was independent of every external circumstance.

"I shall not say that I still continue to think and feel after this manner, for, though quite the same sort of man at present that I was then, I have, perhaps, ascertained that my happiness does not now center so exclusively in myself. To you, I dare say, I need not be more explicit. But though in consequence of this discovery, I have become somewhat solicitous perhaps of rising a step or two higher in the scale of society, I find it is one thing to wish and quite another to attempt. I find, too, that habits long indulged in, and formed under the influence of sentiments such as I describe, must militate so powerfully against me, if that attempt be made, as to leave little chance of success. My lack of a classical education has barred against me all the liberal professions; I have no turn for business matters; and the experience of about twelve years has taught me that, as an architect or contractor (professions which, during at least that space of time, have been the least fortunate in this part of the kingdom of all others), I can indulge no rational hope of realizing what I desire. There is one little plan, however, which is rather more a favorite with me than any of the others. I think I have seen men not much more clever than myself, and possessed of not much greater command of the pen, occupying respectable places in the ephemeral literature of the day as editors of magazines and newspapers, and deriving from their labors incomes of from one to three hundred pounds per annum. A very little application, if I do not overrate my abilities, natural and acquired, might fit me for occupying a similar place, and, of course, deriving a corresponding remuneration. But how push myself forward? Simply in this manner. I have lately written, as I dare say you are aware, a small traditional work, which I have submitted to the consideration of some of the literati of Edinburgh, and of which they have signified their approval in a style of commendation far surpassing my fondest anticipations. I shall try and get it published. If it succeed in attracting any general notice, I shall consider my literary abilities, such as they are, fairly in the market; if (what is more probable) it fail, I shall just strive to forget the last two years of my life, and try whether I can not bring a very dear friend to forget them too. God has not suffered me in the past to be either unhappy myself or a cause of unhappiness to those whom I love, and I can trust that he will deal with me after the same fashion in the future. I need not say, my dear madam, that I write in confidence, and for your own eye alone.

If I fail in my little scheme, I shall bear my disappointment all the better if it be not known that I built much upon it, or looked much beyond it. In such an event, the pity of people who, in the main, are less happy than myself (and the great bulk of mankind are certainly not happier) shall, I trust, never be solicited by,

"My dear Madam, etc.

NEW OUTLOOK IN LIFE — DIFFICULTIES OF PUBLICATION — LETTERS TO MISS FRASER.

The quiet of intellectual luxury and philosophical contentment, broken up by the agitation of a more genially inspiring hope; the pride of the stone-mason, who has been accepted as lover by a lady forbidding him to place her in any position in which the world might fail to recognize her for what she was—Miller now looked anxiously round him for some means of bettering his social status. He often thought of the backwoods of America; but, though the project of emigration may have had some charms for his fancy, it never laid hold on his heart. He may have seen himself, with his mind's eye, a brawny pioneer of civilization, making clear, with stalwart arm and glowing forehead, a space in the primeval forest, to be occupied with field and garden and homestead, and at moments there may have been fascination in the view; but his affections were anchored in Scotland. His favorite idea, therefore, as we saw in the preceding letter, was that he might undertake the editorship of a Scottish newspaper. Some offer of the kind reached him from Inverness, but he did not consider it eligible. He shrank from the risk of depending for a livelihood upon promiscuous contribution to periodicals, and had the shrewdness to be aware that, neither by his poems nor by his letters on the herring fishery, had he attained celebrity enough to command for his productions a ready sale and a high price in the market of current literature. His disposition was at all times the reverse of sanguine, and the largest and most radiant possibility had a less attraction for him than a very small certainty.

For the present, therefore, he determined to watch and wait, concentrating his efforts on the improvement of his prose style, and preparing a prose work which might conclusively scale for him the heights of literary distinction. Soon after the appearance of his poems, we find him at work on a traditional history of his native parish, and, at the time when his engagement with Miss Fraser commenced, he had composed enough to fill a goodly volume. To remove its blemishes, heighten its beauties, and procure its publication, were for several years his chief endeavors. Against getting from friends and the public, orders in advance of publication, the British mode of publishing by subscription, he had objections which were,

for a long time, invincible. The stubborn independence of his nature, the profound contempt with which he looked upon those mendicant friars of literature, who, incompetent to succeed as mechanics and failing to sell their manuscripts to book-sellers, hawk subscription-lists about country districts, and make beggary more hideous by conceit and affectation, and the dainty exclusiveness of his appetite for fame, loathing the very idea of a reputation he did not owe to his unaided efforts, all combined to dissuade him from this mode of publication.

Ultimately he gave way on the point, influenced by satisfactory reasons of which we shall hear; but the difficulty was evidently unresolved at the time when Miss Fraser addressed to him the following note. Its precise date has not been preserved, but I take it to have been written in 1833. "You are in difficulty about the printing of your book, and I might render you some assistance. Can I help, at least, satisfying myself whether or not it be in my power? I have a little hoard of money (about forty pounds), which I may put in trinkets or in the fire, and no one know any thing of the matter. Will you not let me put it to a nobler use? . . . Dear Hugh, do not refuse me; if it will pain you to fancy yourself indebted to me, make it a loan. I shall indeed receive my own with usury when it shall have been of service to you." To which the reply was decisive, and, I have no doubt, prompt. "Not all that industry ever accumulated could impart to me so exquisite a feeling as your kind and generous offer. My heart still throbs when I think of it, and yet, during the greater part of last night—for I have not slept for two hours together—I could think of nothing else. Could I avail myself of it, however, I would but ill deserve the affection which has prompted it. . . . . God bless and reward you; every new trait I discover in your character, while it draws me closer to you, shows me how ill I deserve you."

Miss Fraser, with a view of assisting her mother and finding a channel for her own energies, taught a class of young ladies. In the eyes of these, Hugh Miller, whose relation with their mistress they knew, was naturally a person of importance, and when they had any thing to coax out of her they thought it good policy to apply to him. Little children, sweet-tempered women, light-hearted, laughing girls—all gentle and innocent creatures—loved and trusted this man, and "found their comfort in his face." The old Scottish customs of Halloween, immortalized by Burns, had not yet become obsolete in Cromarty, and Miss Fraser's pupils were disposed to celebrate their Halloween in the room usually devoted to study. Miss Fraser's consent was required; and one day, when Hugh was at work in the church-yard, he was "waited upon by a deputation" of the girls with a request to write a petition for them. He complied.

"To Miss Fraser, the humble petition of her attached and grateful pupils,

"Sheweth,

"That your petitioners had great-grandmothers who were young, unmarried women about the beginning of the last century. Like most young women of our own day, they were all exceedingly anxious to know what sort of husbands they were to have, or whether they were to have any husbands at all. And, that they might satisfy themselves on this important matter, they burnt nuts and ate apples every Halloween, and with such singular success that they all lived to see themselves married—married, too, to men who had the honor of being the great-grandfathers of your humble petitioners.

"That your petitioners have, therefore, acquired a profound respect for the ancient and laudable practice of burning nuts and eating apples. They are desirous, too, to have a peep into the future, not only for the sake of their grandmothers, but also for their own, being not a little solicitous, as every Halloween for the last five years has given them a new set of husbands, to ascertain the exact number which is to fall to the share of each.

"That your petitioners deem Happiness a very excellent sort of lady, and know many wiser women than themselves who are of the same opinion. There is that in her character which makes people regard even the places in which she has visited them with feelings similar to those which incited the old Greeks and Romans of our story-books to raise temples and altars on the hill-tops on which their gods had alighted. Now it so happens that your petitioners have sent her a card of invitation for next Halloween, to share with them in their nuts and apples, and she is to be with them without fail. And they would fain meet with her on this occasion in that apartment in which their dear mistress has done so much to render them wiser and better. For so sincerely do they love it, that they are desirous of loving it more, and this by rendering it a scene of splendid hopes, rich promises, and good fun—by associating with it recollections, not of long lessons or false grammar, but of fine husbands, gilt coaches, nuts, gingerbread, and apples.

"May it therefore please you to grant to your humble petitioners full possession, during the coming night of fun and prediction, of that interesting apartment in which you have so often imparted to your petitioners more of good than they have been all fully able to carry away. As you have already so liberally given to them of the kernel, may it now please you to add the shell. And your attached and grateful petitioners shall, in return, sacrifice an entire egg to your happiness and prosperity."

The petition was successful.

One thing is clear: Hugh Miller's existence at this time was bright and cheerful. At peace with himself, and, if we except a fierce Cromarty radical or two, with all the world; exempt from every care which gnaws the human heart; happy in friendship, happy in love; hope and ambition touching his horizon with bright auroral hues, but not inflaming him with any feverish heat—he was indeed

most fortunate. For events, there were occasional trips to Inverness, fishing excursions to the rocks, exploring rambles on the shore, picnics to the Burn of Eathie. All the time he was pursuing his enterprise of self-culture with the steady enthusiasm of a Goethe. He never wrote a letter or penned a paragraph for the "Inverness Courier" without striving to make it a means of improving himself in composition. He grudged no toil in writing and rewriting his Traditions, resolutely bent upon bringing them in style, thought, and interest, to his high standard.

It need not seriously qualify our estimate of his felicity to know that the business of getting his volume into print proved for him, as it has proved for so many authors, a business of difficulty. Sir Thomas Dick Lauder—known to literature by his novel, "The Wolf of Badenoch," and to science by his account of the great Morayshire floods and dissertation on the parallel roads of Glen Roy—had formed a high opinion of the Cromarty poet's capacity, and exerted himself to procure the publication of his book. Sir Thomas submitted the manuscript to an Edinburgh critic, an expert, it appears, in the tasting department of the literary guild, whom he describes as "one of the first literary judges of the day." The response was more flattering than satisfactory. "I do not," wrote this minister of fate, "pretend to have read the whole with much care; but I have read quite enough to impress me with a decided opinion of his [Miller's] very extraordinary powers as a prose writer." There is, however, an objection to the history, to wit, "its great lengthiness;" and though the great man repeats his conviction that Mr. Miller is "a very extraordinary person," he does not say that he will recommend any of the purveyors of literary viands whom he professionally advises to place it on their bill of fare. Messrs. Oliver and Boyd, and Mr. Andrew Shortrede, to whom respectively the volume is offered, are almost equally complimentary and equally tantalizing. Mr. Miller's manner of treating his subject "does him great credit." It is difficult to say what will succeed, but "as easy as ever to say what ought to succeed, and under this class no one can hesitate to rank the Traditional History of Cromarty." But "the work would require considerable pruning to suit the public taste," and, on the whole, "we regret that we can not avail ourselves of your kind offer." Mr. Shortrede would "risk the printing," if any one would "venture the other expenses;" but farther than this not even Mr. Shortrede, though he evidently hankers after the thing, will go. He proposes to forward the MS. to his London correspondent, "to ascertain his opinion," before returning it. Sir Thomas, who felt that he "had no chance with Black, Cadell," or other publishers, apprised Miller of his want of success, trying to put the discouraging tale as tenderly as possible. "The difficulty," he said, "of getting out a *literary* work at present is immense. I have never been able to get my first volume of Legends launched, and I now begin to despair of doing

so." In short, our aspiring Ixion can not have the real Juno, but here is a cloud, as like her in form and color as a cloud can possibly be, and he is most civilly invited to derive what satisfaction he can from embracing it.

Sir Thomas's note is dated 14th October, 1833; Miller replies on the 18th of the same month. He is disposed to make as much of the cloud as is feasible, but sees well that it is a cloud after all.

"HONORED SIR:—I little thought, when writing you last spring, of the world of trouble to which my request and your own goodness were to subject you; had I but dreamed of it I would not now, perhaps, be possessed of your truly valuable opinion of my MS.,—an opinion which has given me more pleasure than I dare venture fully to express. I set myself down in my obscure solitudes to seek amusement in making rude pictures of my homely ancestors, and the scenes of humble life by which I am surrounded, and find that my careless sketches have elicited the praise of a master.

"In a work composed as mine has been, and on such a subject, by a person, too, so acquainted with the taste of the public and the present aspect of the literary world, what wonder that there should be a good deal which would be perhaps better away? The circumstances which have barred upon me those magazines of thought which constitute the learning of the age have prevented me from acquiring its manners, or becoming familiar with its tastes. And yet, as it was probably these very circumstances which led me to think on most subjects for myself, I must just bear with the misfortune of being uncouth and tedious in some of my pages for the sake of being a little original in the rest. . . . Some of my dissertations, too, are, I suspect, sad, *leaden* things, though they amused me not a little in the *casting;* and some of my minor traditions, though recommended to me by my townsfolks, are, I am aware, like reptiles in a bottle of spirits, hardly worth the liquid which preserves them. . . . Some of my acquaintance here, who seem much more anxious to see my history in print than I am myself, are urging me to publish by subscription; and this they assure me I could accomplish through the medium of my friends without the meanness of personal solicitation, or indeed without meanness of any kind; but I am still averse to the method, and at any rate will not determine with regard to it until my MS. has been submitted to Mr. Shortrede's correspondent. Even should his opinion be an unfavorable one, and the dernier scheme prove unfavorable too, still my fate as a writer shall not, I trust, be decided by that of my Traditions. The same cast of mind which has enabled me to overcome not a few of the obstacles which my place in society and an imperfect education have conspired to cast in my way, and this, too, at a time when the approval of such men as the gentleman whom I have now the honor of addressing was a meed beyond the reach of even my fondest an-

ticipations, shall, I trust, enable me to persist in improving to the utmost the powers which I naturally possess. And should I fail at last, it will assuredly be less my fault than my misfortune.

"I am wholly unable to express the sense I entertain of your goodness, but believe, honored sir, that I can feel and appreciate it. My days are passing quietly and not unhappily among friends to whom I am sincerely attached, and by whom I know myself to be regarded with a similar feeling; and though that depression which affects the trade of the whole country bears so low that it has reached even me, I can live on the little which I earn, and am content. Still, however, I indulge in hopes and expectations which I would ill like to forego—hopes, perhaps of being somewhat less obscure, and somewhat abler to assist such of my relatives as are poorer than even myself; but the future belongs to God. Winter, my season of leisure, is fast approaching, and should I live to see its close, I shall probably find myself ten or twelve chapters deep in the second volume of my Traditions, mauger the untoward destinies of the first."

The reference to Mr. Shortrede's London correspondent was unavailing. Nothing remained but to fall back upon the scheme of publication by subscription. "I stated," he writes to Sir Thomas Dick Lauder, in June, 1834, "when I had last the honor of addressing you, that some of my townspeople and acquaintance seemed to be more anxious to see my history in print than I was myself, and that they were urging me to publish it by subscription. It is not difficult to be persuaded to what one half-inclines; my chief objection to the scheme arose out of a dread of subjecting myself to a charge of meanness by teasing the public into an unfair bargain—giving it a bad book, and pocketing money not counterfeit in return. But I am assured that the book is not bad, and that there would therefore be nothing mean or unfair in the transaction; and the partiality for one's own performances, so natural to the poor author, has rendered the argument a convincing one. I publish, therefore, by subscription, so soon as three hundred subscribers at eight shillings can be procured. Pecuniary advantage forms no part of my scheme; and, though not very sanguine, I trust I shall succeed. . . . If ever my Traditions get abroad, I find they will be all the better for having stayed so long at home. Since sending you my MS. I have thought of alterations which will materially improve some of the chapters."

The subscription scheme was attended with complete success. Miller's townsmen and friends exerted themselves strenuously in his behalf, and in due time his book saw the light. But we must not anticipate.

His correspondence, while these negotiations on the subject of his volume were in progress, had been copious, and some portion of it must be laid before the reader. No further introduction is required to the following selection from his letters of the period, addressed to Miss Fraser. Whenever Miller left Cromarty, whether for Inverness or

elsewhere, he commenced writing to Miss Fraser, and seems to have carried a pen and ink-horn along with him, so that he might put his impressions into black and white for conveyance to his mistress at every resting-place on the way.

"INVERNESS, 10 o'clock at night.

"Your criticisms, my Lydia, came rather late; but when I receive my proof-sheets, I shall bring them to you that we may talk over them. You are a skillful grammarian, but in some points we shall differ—you know *we* can differ, and yet be very excellent friends. I might try long enough ere I could find a mistress so fitted to be useful to me—so little of a blue-stocking, and yet so knowing in composition. I am glad you are better, and that you slept so well last night, even though your slumber abridged your letter. I saw you to-day as I passed your mother's. You were standing in the door with a lady, and looked, I thought, very pale. O my own Lydia, be careful of yourself! Take little thought and much exercise. Read for amusement only. Set yourself to make a collection of shells, or butterflies, or plants. Do any thing that will have interest enough to amuse you without requiring so much attention as to fatigue. I was sadly annoyed in the steamboat to-night by a sort of preaching man—one M——, a Baptist. He has little sense and no manners, and his religion seems to consist in finding fault. Of all nonsense, my Lydia, religious nonsense is the worst; of all uncharitableness, that of the sectary is the bitterest. We too often speak of intolerance as peculiar to classes who chance to have the power of exercising it,—as inseparably connected with church establishments and a beneficed clergy; but it is not with circumstances or situations that it is connected; it is with inferior natures—it is with bad men. The proud, heart-swollen Churchman, who condemns heretics to the flames of *this* world, and the rancorous heresiarch, his opponent, who can only threaten them with the flames of the *next*, possess it in an equal degree. Nay, it may rage in the breast of the Dissenter, and find no place in that of the Churchman. I saw as much of it in M—— to-night (and yet no man could denounce it more earnestly) as might serve a Grand Inquisitor. I had no dispute with him, as I saw it would be an easier task to find him argument than comprehension; besides, I wished to see the fellow, horns and all; and had I touched him, he might have drawn in the latter. Good-night, my Lydia; these are commonplace remarks, but they have an important bearing on the present time. A persecuting, intolerant spirit directed against our national Church animates the great body of our Dissenters, and there can not be a fairer specimen of the more active of the class than M——. Good-night: fine thing to be able to write to one's friends."

INVERNESS, Thursday Morning.

"I have been walking about the streets for an hour, looking at people's heads and faces, and at the book-sellers' windows. I wish I knew the house you were born in; I would pay my respects to it with a great deal more devotional sincerity than some pilgrims feel when kneeling before the Virgin's house at Loretto. I have been walking in the suburbs; it is still too early to call on any of my acquaintance. You little know, my lassie, how covetous I have become. I have hardly in the course of my walk seen a snug little house with woodbine on the walls, and a garden in front, without half ejaculating, 'Here with my Lydia, and with a very little of that wealth which thousands know not how to employ, I could be happy.' Well, though not born to riches, I have been born to what riches can not purchase,—to the possession of an expansive heart that can be sincerely attached, and happy in its attachment, and to the love, the pure, disinterested, unselfish love of a talented and lovely woman."

"GRAY CAIRN, half-past 3 o'clock.

"Here, my own Lydia, have I sitten down to write you after a rather smart walk of about eleven miles; and my first thought is of you. Have you ever visited the *gray cairn*, or surveyed the bleak barren moor that surrounds it? It towers high and shapeless around me, gray with the moss and lichens of forgotten ages,—a mound striding across the stream of centuries, to connect the past with the present,—a voucher to attest the truth of events long forgotten,—a memorial carved over by the fingers of fancy with a wild, imaginative poetry. How very poetical savage life appears when viewed through the dim vista of time! The savages of the present day we regard as a squalid, lazy, cruel race of animals,—disgusting mixtures of the wolf, the fox, and the hog, who live, and love, and fight, not with the wisdom, gallantry, courage of men, but with the craft, the brutality, the ferocity of wild beasts. Not such the sentiment when we look through the clouded avenue of the past on the deeds and habits of our painted ancestors. The poetical haze of the atmosphere magnifies the size of the figures, smooths down their various hardnesses of outlines, and softens and improves their colors. On the wild moor before me have some of them fought and died in some nameless but hard-contested and bloody conflict,—nameless now, though long celebrated among their descendants, and often sung at their rude hunting-feasts and war banquets. See how we are surrounded by vestiges of the fray! Observe yonder rectangular, altar-like tumulus,—the scene, it is probable, of human sacrifice; mark how thickly those grave-like mounds are scattered over the moor, and how regularly they run in lines. And then turn to the cairn behind,—the monument of some fallen chief. Give yourself up for a moment, my Lydia, to the sway of imagination. The moor is busy with life, the air rent with clamor.

Do you not see waving arms and threatening faces, the glittering of spears, the flashing of swords, eyes flaring, wounds streaming, warriors falling? See, the combatants are now wedged into dense masses, now broken into detached bands; now they press onward, now they recede; now they open their ranks, now they close in a death-grapple. There are the yells of pain, the roarings of rage, and the shouts of exultation. Passion is busy, and so is death. But the figures recede and the sounds die away, till we see only a wide, solitary moor, with its mounds and its tumuli, and hearing only the wind rustling through the heath."

SCHOOL-HOUSE OF NIGG, Monday Evening.

"Here am I set in Mr. Swanson's sleeping-room beside a not bad collection of books. I find I am not nearly so great a literary glutton now as I was fifteen years ago; there was a keenness in my appetite at that time which I have hardly ever seen equaled. The very heaven of my imagination was an immense library; and my fondest desires asked nothing more from the future than much time and many books. Have you marked the progress of your mind, from the days in which you dressed your doll to the days in which you are addressed by your lover? I remember that from my fourth to my sixth year I derived much pleasure from oral narrative, and that my imagination, even at this early period, had acquired strength enough to present me with vividly colored pictures of all the scenes described to me, and of all the incidents related. My mind then opened to the world of books. I began to understand the stories of the Bible, and to steal into some quiet corner, that I might peruse tales and novels unmolested by my companions. In my twelfth year I could relish a volume of the 'Spectator,' and some of the better essays of Johnson; in my fifteenth I was delighted with the writings of the poets. About a year after, I found that 'twas better to be solitary than in company; my mind had acquired strength enough, as nurses say of their children, to stand alone; and a first consequence of the improvement was, that I exchanged my many companions for a few friends. I became a thorough admirer of nature for its own sake; before, I had only affected to love it from finding so much written in its praise. I was first delighted by the mild, the calm, the beautiful; next, by the wild, the terrible, the sublime. Years passed on, and man became my study. I delighted in tracing the progress of the species, from the extreme of barbarism to that of refinement, and in marking the various shades of intellectual character. Studies of a more abstract class succeeded, and I became a metaphysician. I strove to penetrate into the first causes and to anticipate the remoter consequences of things; and reasoned on subjects such as those which employed the fiends in Milton when they 'found no end in wandering mazes lost;' but I soon perceived that the over-subtle thinker reaps only a harvest of doubt, and that, when truth is our object, it is quite as possible to miss the mark by overshooting as by falling short. In the progress

related, and I can not trace it further, habits have been successively formed and relinquished, and appetites acquired and satiated. But, though many of these have long since ceased, much of that which they accumulated for me still remains,—wrought up in some degree into one entire mass, but in some degree also bearing in their separate portions the color and stamp of the period at which they were acquired. I find, too, that as in the progress of my mind (to use your own happy language) 'what were at one time the subjects of thought and reason to me have become first principles,' so habits and modes of thinking which have been formed under the influence of our second nature—custom—have become to me what seem primary tendencies of the mind; and that if there be much of originality in my thoughts, I, perhaps, owe it in nearly as great a degree to the peculiarity of my education as to any innate vigor of faculty. But you will deem me dull and an egótist."

"ROADSIDE, Tuesday, 11 o'clock.

"I am on my way to Chapel-Hill; the day is so oppressively hot that the grass and corn* look as if half boiled, and there is a dense cloud of flies buzzing about my head. I saw, two minutes since, a large weasel quitting its hole to drink. My eyes are so dazzled by the glare of the sun on the white of your letter, which I have been again perusing, that I hardly see the characters I am forming. You have embodied very happily, in your description, the yawning tedium of some of our Cromarty parties, and caught to the life the tone of the sort of flippancy which has to pass in them for wit. 'Tis a sad waste of time, my own Lydia, to be engaged in such; how much better could we not contrive to spend an evening with only ourselves for our guests! But I suppose *parties* every-where are almost equally profitless. They were profitless even in Athens, in its best days. 'Why,' says Socrates, 'do the people call in musicians when they entertain their friends? Is it not because they have not learned to converse!'"

"MANSE OF KILMUIR, half-past 7 o'clock.

"I was on the way to the ferry this evening, but John impressed me to accompany him on a visit to Mr. M——. We crossed the sands of Nigg together,—a long, dreary flat, roughened by the cork-like hillocks of the sand-worm, and speckled with shells. Barren and dreary as it may seem, I know no part of the country busier with life. Myriads of sea-cockles have grown up and perished in it, age after age, till the shells have so accumulated that in some places they form beds many feet in thickness; and, though thousands of cart-loads have of late years been carried away for lime, the supply seems as great as at first. As we passed through, immense shoals of shrimps and young flounders were striking against our naked feet,—reminding me, from their numbers and their extreme minuteness, of

* American readers will bear in mind that "*Corn*" in Britain means any kind of *grain*.

the cloud of flies that buzzed round my head at noon. I saw the sand-worms lie so thickly that their little pyramids fretted the entire surface nearly as far as the eye could reach, reminding one of the ripple raised by a light breeze on a sheet of water, while the remote horizon was darkened by endless beds of muscles and periwinkles. I am certain there is more of animal life in a few acres of this waste than is comprised in the human population of the entire world. In some comparatively recent era—recent, at least, in the chronology of the geologist—the sea seems to have stood several fathoms higher on our coasts than it does at present. Large beds of shells have been found in the interior of the valley, the opening of which is occupied by the sands of Nigg, more than two miles beyond the extreme rise of the tide; and John tells me that, not many years since, the bones of a fish of the whale species were found in the parish of Fearn, at a still higher level.

"I was shown, on quitting the sands, two fine chalybeate springs, which gush out of a rock of veined sandstone among the woods of Tarbat-house. They are thickly surrounded by pine and willow, in a solitary but not unpleasing recess, and their waters, after leaping to the base of the rock, with a half-gurgling, half-tinkling sound, unite in a small runnel, and form a little melancholy *lochan*, matted over with weeds, and edged with flags and rushes. The waters of both are strongly though not equally acidulous, and the course both along the rock and through the runnel is marked by a steep belt of ferruginous matter, which might be converted into a pigment, resembling burnt-sienna."

In the letter to his "Dear Lydia," just quoted, he was dilating upon geological specimens, and here we transcribe from a letter to Miss Dunbar, dated "Cromarty, Sept. 25, 1834."

"For the last fortnight some of my very few leisure hours have been employed in collecting geological specimens for my kind friend, Mr. George Anderson—one of the most thorough-bred geologists in the north of Scotland. By the way, I see from the newspapers that he has been highly complimented for his labors in this department, at the great scientific meeting at Edinburgh. Some of the specimens I have procured are exceedingly curious; they contain the petrified remains of animals that now no longer exist except in a fossil state —bits of charcoal, pieces of wood, and nondescript substances which one can hardly refer to either the animal or vegetable world. Of the several animal tribes the very curious shell-fish termed the *cornu ammonis* abounds most; but, though at one period the most numerous of all the testaceous tribes of the country, it is now no longer to be found except as a fossil, deeply embedded in limestone or bituminous shale, and buried under huge hills of clay and gravel. There are grounds, indeed, for the belief that the race of man, and almost all the tribes of animals with which we are acquainted, have come into being since it ceased to exist; at least no remains of the living

tribes have been found in the beds in which the cornu abounds. Like the nautilus, it was a sailing animal, and, though different in form, its structure seems to have been nearly the same. We find it partitioned in the same way by little cross walls, which divide the cavity within into a number of minute cells, by means of which, and by a power it must have possessed of altering its gravity, by nearly vacating or occupying these to the full, it seems to have moved upwards or downwards at pleasure. The inner part of the shell seems, from the more perfect impressions of it which I have met with, to have been of a pearly luster; the outer is ridged and furrowed with much regularity, and there is at least as much elegance in its general contour as in that of the Ionic volute, which it nearly resembles. But why so much beauty, when there was no eye of man to see and admire? Does it not seem strange that the bays of our coasts should have been speckled by fleets of beautiful little animals, with their tiny sails spread to the wind and their pearly colors glancing to the sun, when there was no intelligent eye to look abroad and delight in their loveliness? Of all the sciences there is none which furnishes so many paradoxical facts and appearances as geology. . . ."

Are not these foreshadowings of his future fitness for writing of the "Old Red Sandstone," for tracing the "Foot-prints of the Creator," and giving to the world the "Testimony of the Rocks?"

Mrs. Grant, of Laggan, suggested about this time to her friend, Miss Dunbar, with a view to Miller's advancement in life, that he might do the "blocking work" for a young sculptor "likely to rise to eminence." Mrs. Grant referred to "Allan Cunningham's success in doing the blocking work for Chantrey," by way of illustrating the promotion intended for Miller. On this Miss Dunbar wrote to Hugh: "I could not well take it on me to reply to what she suggests without a reference to yourself, though I dare say I anticipate your answer, and so I write. Pardon the terms she uses as applicable to you, and believe me, that neither in speaking nor writing of you have I expressed myself in a way to sanction them. I had honesty and delicacy enough not to assume the airs of a lady-patroness; I ever spoke of you as my friend, and as proud that you were such." In the same letter Miss Dunbar mentioned that Baron Hume, nephew to the historian, pronounced by Kemble "positively the first" critic of the day, had seen the prospectus of Miller's book. "He perused it," she adds, "with much interest and no little surprise, and states, as his opinion, that the writer excels in that classical style which many well-known writers of the present day, so far from attaining to, do not seem even to understand." Hugh, in his reply, speaks of Baron Hume before touching on Mrs. Grant's proposal.

"CROMARTY, October 25, 1834.

"Never was my little remnant of modesty in such danger as it has been exposed to by the critical remark of Baron Hume. But, if

at all worthy of the compliment it conveys, I owe my merit chiefly to accident; to my having kept company with the older English writers—the Addisons, Popes, and Robertsons of the last century—at a time when I had no opportunity of becoming acquainted with the authors of the present time. And the tone of these earlier writers I have, I dare say, contrived in some measure to catch, just as in my spoken language I have caught the tone of our Cromarty Scotch. . . . . .

"Favor me, when you write Mrs. Grant, by tendering her my best thanks for her suggestion, and the interest she takes in my welfare, and oblige me by stating that I can not avail myself of the former. But why, my dear madam, apologize for the terms she employs in speaking of me? Trust me, I am not one of those who repay with insolence the notice by which they are honored. The much kindness you have shown me, and the confidence you have reposed in me, have not yet made me forget our respective places in society; and, though no one entertains a more sincere love of independence, or more carefully avoids any imputation of meanness, it would not cost me a single blush were the whole world to know how much cause you have given me to be grateful."

TWO LETTERS ON RELIGION.

The two letters addressed to Mr. William Smith, Forres, are without question among the most important Miller ever wrote. They form a supplement to that portion of his spiritual history which embraced his period of indifference and semi-skepticism, and contain not only an explicit confession of faith, but a statement of that intellectual basis on which it was for him a necessity that his faith should rest. Reticent as he was in all that related to his soul's condition,—sensitively averse to the unveiling to human eyes of his spiritual experience,—he would probably never have written such letters had not an occasion occurred which constrained him to overcome every scruple. A friend lay ill, perhaps unto death; it seemed possible to Hugh that he might minister to his spirit's health and his eternal salvation; and he yielded to the impulse of affection and the mandate of duty. The scheme of religion which he unfolds in the letters is that of simple acceptance of Christ for salvation, as he is offered in the gospel,—acceptance with the heart as well as the head, acceptance with clear consciousness that the difficulties of the intellect can not be wholly removed. The religion of Miller was to cling close to Christ, to die with Christ, to rise with Christ, to wear with him the crown of thorns, and to receive from him the crown of glory.

The idea formerly thrown out by Miller, that Christianity suggests objections so many and so obvious that common sense would not have permitted its invention by man, receives in these letters its balance and counterpart in the hypothesis that the adaptation of

Christianity to man's wants is so exquisite, and the evidence so strong, that its obvious offenses to mere human reason tend to prove that it is divine.

From a biographic point of view, the letters have a special interest, as showing the tenacity with which Miller retained thoughts which had once been deliberately accepted into his intellectual system. The illustration of the working of the atonement of Christ, given long subsequently in the "Schools and School-masters," is but a slight expansion of that which he here lays before his friend, and the thesis maintained, that man can apprehend facts and results in God's universe, whether physical or spiritual, but not the constructive principles and processes by which they are brought about, is worked out in a chapter on the Discoverable and the Revealed in the "Testimony of the Rocks," which is, perhaps, the most valuable that Hugh Miller ever penned.

"CROMARTY, August 5, 1835.

"MY DEAR WILLIAM:—I need not tell you how famous Cromarty is for its hasty reports, or on how slender a foundation the imagination of the townsfolks sometimes contrives to build. I must needs tell you, however, for the circumstance forms my only apology for now writing you, that the last story current among us affected me more deeply than any of its class ever did before. On your late severe attack, your brother, the doctor, was called hastily to Forres, and the story went that you were dead. I never before knew how much I valued and esteemed you; the thought, too, that one with whom I had so often conversed, and with whose mind I was so thoroughly acquainted, had passed the dark bourne which separates this world from the other, had something inexpressibly solemn and melancholy in it. I felt for the time that, disguise the fact as we may, the main business of this life consists in preparing for another, and conscience was not quite silent when I remembered that, though you and I had beaten together over many an interesting topic, the most interesting of all had been omitted. You remember the fable of the wise men who were permitted to make a three days' visit to the moon that they might report to our lower world regarding its plants and animals, and who, on their return, had to confess that they had squandered their time in drinking with gay young men and dancing with beautiful women, and had only remarked that the trees and sky of the planet, when seen casually through a window, very much resembled those of our own. Alas for the application of this ingenious story!

"There are few men who do not, at some time or other, think seriously of the future state, or who have not formed some, at least, theoretic set of notions regarding the best mode of preparing for it. Man was born to anticipate a hereafter; he is a religious animal by the very constitution of his nature, and the thousand forms of super-

stition which still overspread the world and darken every page of its history are just so many proofs of this. It has often struck me that the infidel, when in his assaults on revelation he draws largely from this store of delusion, sadly mistakes his argument; every false religion which has sprung out of the nature of man shows us, not surely that there is no true religion, but that we stand in need of a true one; every mythologic folly and absurdity should convince us that we need an infallible guide. Regarded in this light, the 'Shaster' and the 'Koran' are substantial proofs of how ill we could do without the Bible; and Paganism and Mahometism powerfully recommend Christianity. You, my dear William, to whom it has been given to possess an inquiring and reflecting mind, must have often thought of the final destinies of man; I myself have observed in you much of that respect for sacred things which is one of the characteristics of an ingenuous nature; but there is, perhaps, danger that your very ingenuity and acuteness might have led you into error.

"Christianity is emphatically termed the wisdom of God, but it is not on a first examination that a reasoning mind can arrive at the evidence of its being such; on the contrary, some of its main doctrines seem opposed to the more obvious principles of common sense; and this quite in the same way that, before the days of Newton, it would have seemed contrary to these principles to allege that the whiteness of light was occasioned by a combination of the most vivid colors, or that the planets were held in their orbits by the law which impelled a falling stone towards the ground. Now this is exactly what we might expect of the true religion. A religion made by rational men—many deists, you know, were eminently such, and we may instance theirs—will be, like themselves, rational and easily understood; but this very facility is a conclusive proof that it had its origin in the mind of man. It is like all his other works,—like the clocks and watches and steam-engines of his construction,—easily understood and easily imitated; but it is not thus with Christianity, nor is it thus with the great machine of the universe. Let us, my dear William, take a brief survey of some of the main doctrines of this religion; they concern us so nearly that it may be fatal to misunderstand them.

"The invariable reply of the apostles of our Savior to that most important of all queries, 'What shall I do to be saved?' was, 'Believe in the Lord Jesus Christ.' Belief seems to be, if I may so speak, the main condition of man's acceptance; but belief in what, or whom? in a person who is at once God and man, and who thus, to the perfection of a Divine nature, adds the feelings of a human heart! Now there is something amazing in this, something which, for its exquisite fitness to our moral and sentient constitution, is worthy the conception of a God. Observe, my dear William, the false religions of the world, and you will find that they run into two opposite extremes. In the artificial religions which have been formed by the intellect of

man, God is represented as a mere abstraction of wisdom and power. He is the Great First Cause of the philosopher, and it is scarcely more possible for the human heart to love him as such than it is for him to love any of the great second causes, such as the sun with its light and heat, or the law of gravitation. And hence the coldness and utter inefficacy of all such religions, whether known under the name of philosophical Deism or Socinian Christianity; they are totally unfitted to the nature of man. The religions of the other class are rather the offspring of passion than intellect; they arise in those obscure and remote ages when unenlightened man created his gods in his own image. What was Jupiter or his son Hercules, or what their companions in the court of Olympus, the Dianas, Venuses, or Minervas with which the old poets have brought us acquainted, but human creatures bearing the very mold and impression of their worshipers? And such deities could be loved and feared just in the way one human creature can love or fear another; the belief in them powerfully influenced the conduct, but their worship, as it originated in the darkened human heart, was a worship of impurity.

"Observe with what a truly godlike wisdom Christianity is formed, to avoid the opposite extremes of these two classes, and how it yet embraces more than the philosophy of the one, and more than the warmth of the other; the object of our worship is at once God, the First Great Cause, and the man Jesus Christ, our brother.

"But not merely must we believe in Christ as God, but also as our Savior; as the restorer of our moral nature, and our sacrifice or atonement. There are wonderful Janus-like mysteries here, inexplicable in their one aspect as they regard God, though simple and easy in the other as they regard man. Perhaps an illustration from the human frame may serve to explain my meaning. Need I remind you, who are an anatomist, and acquainted with Paley to boot, of the admirable adaptation of the human frame to the various ends for which it was created, or how easy it is for a person of even ordinary capacity to be made to perceive this adaptation? Almost any one can see how fairly and beautifully the machine works,—but who, on the other hand, can conceive of the higher principles on which it is constructed? Who can know any thing of the workings of the brain as the organ of thought, or of the operations of the nerves as the seats of feeling; of how the chyle is chosen by its thousand blind mouths, and every other fluid rejected; of how one gland should secrete a liquor so unlike that secreted by another,—of, in short, any of the thousand phenomena of our animal nature when we trace them towards their first cause? The working of the machine is simple, its construction we find to be inexplicably mysterious. Now it is thus with Christianity. No one can understand how the sufferings of the Savior satisfy the justice of God,—that regards, if I may so speak, the construction of the scheme; but every one who examines may see how wonderfully these vicarious sufferings are suited to the nature and the wants of

man,—for that regards its working. But it is not in the limits of so brief a composition as a letter that such a subject can be discussed.

"May I recommend to you, my dear William, to lay hold on this Savior as the way, and the truth, and the life? He is willing and able to save to the uttermost all who trust in him. You suffer from pain and dejection, he suffered from pain and dejection also, and hence his wonderful fitness to be the God and Savior of a race born to anguish and sorrow. Not only does he know our weaknesses as God, but he sympathizes in them as man. Forgive me the freedom with which I write you,—it is as a friend,—as one foolish and careless, and often so wrapped up in the dreams of life as to forget its real businesses, but also as one convinced that the Savior can, through his Spirit, make wise unto salvation, and that to secure an interest in him is to possess a righteousness that is perfect, and to have every sin forgiven through an atonement that is complete. May I ask, my dear William, that when you address yourself to him,—and, oh, he is willing to hear and ready to help,—you will put up one petition for your affectionate friend, Hugh Miller."

CROMARTY, August 27, 1835.

"MY DEAR WILLIAM:—I have learned from your brother that you are still confined to your room. Believe me, I sympathize with you very sincerely; and it is in the hope of helping to enliven your solitude for at least a few brief minutes that I again avail myself of a leisure hour in which to write you. I know from experience that there is no solitude like that of a sick-chamber,—it wears away the poor remnant of spirits that indisposition spares to us; but it will not render the sense of this loneliness weightier to you to learn that an old friend, though also a powerless one, continues to regard you with sympathy and esteem. It is a better assurance, however, that He who is more thoroughly your friend than any one else, and who can sympathize with you more deeply, is possessed of a power that has no limits.

"Your brother hinted to me that you are not unwilling I should recur to the subject of my last. I feel, my dear William, that I am unworthy to approach a theme so sacred; I am also too little impressed with it, too little in love with it; but I know of its importance, and I believe in its truth. In one respect, too, we may be better fitted for conference with each other on the doctrines of religion than either of us would be with minds who had never doubted of them. I know you are not unacquainted with infidel objections,—you are familiar with some of the most insidious writings of Voltaire; I am intimate with these also, and with those of many a skeptic besides. And so, as we can approach our subject over nearly the same ground, it is surely not irrational to expect that it may present itself to us in nearly the same points of view.

"I think I remarked to you in my last letter, that Christianity is no common-sense religion; were it such, it would have little in common

with the other marvelous workings of Him who devised it, as these are shown in all he has made, and in his mode of governing all. But do not infer from this, as some infidels do, tacitly at least, that to the human comprehension the absurdities of false religions and the mysteries of Christianity are placed on a similar level. Between what can not be understood because it has no meaning, and what can not be understood because it surpasses the grasp of our minds, there not only obtains an infinite difference, but a difference fully cognizable by the human intellect. The scribblings of a child and the abstruser calculations of a Newton or La Place would not appear equally unmeaning to an attentive observer, however humble his powers; he could not but see now and then little breaks of sense in the mysteries of the one, and wonderful effects produced by them, which would most effectually distinguish them from the nothingness of the other. And it is thus with Christianity. We get occasional glimpses of its meaning, and see instances of its power that may well enable us to distinguish between it and the 'Shaster' and 'Koran.' Its adaptation to the nature of man is truly exquisite. There is a pretty story in Kames's 'Art of Thinking,' introduced by the philosopher for a very different purpose, which will, in part, enable us to conceive of this. Two men who fought in the wars of Queen Anne—the one a petty officer, the other a private soldier—had been friends and comrades for years, but quarreling on some unlucky love affair, they became bitter enemies. The officer made a natural though ungenerous use of his authority in continually annoying and persecuting the other, whom he almost fretted into madness, and who was often heard to swear that he would die to be avenged on him. Both were men of known bravery, and on an occasion of some dangerous service, both were chosen to be of the party selected to attempt it. But the attempt was unsuccessful, and the officer was struck down by a ball in the retreat. 'Ah, and will you leave me here to perish?' he exclaimed, as his old companion rushed past him. The appeal was irresistible; the poor injured man returned, and, raising his wounded enemy, he bore him off amid a storm of shot and shell. And he had just reached what seemed to be a place of safety, when he was struck by a chance ball and fell dead under his burden. But his fate seemed an enviable one compared with that of the wounded man. He rose, forgetful of his wound, and, tearing his hair, and flinging himself on the body, he burst out into the most heart-rending lamentations. For two days he refused all sustenance, still calling on his companion, and ever exclaiming, 'Hast thou died for me who treated thee so barbarously!' and he expired on the third, the victim of mingled grief and remorse. Do you not perceive, my dear William, that the principle which the story unfolds lies deep in our nature? Nothing so prostrates the pride of man or so stings him to the heart as a return of benefits for injuries,—of great good for great evil. In the expressive language of Scripture, it is heaping live coals on the head,

and to blow up these to a tenfold intensity that the hardest heart may melt under them, it is necessary that the injured benefactor, instanced in the story, should die for his enemy. Need I attempt an application, or point out to you with what marvelous, godlike wisdom Christianity appeals to the principle described? 'Peradventure for a good man,' says the Apostle, 'some would even dare to die; but God commended his love towards us, in that, while we were yet sinners, Christ died for us.'

"I am sorry we should have missed so many opportunities of conversing on this subject; little can be done for it in the limits of a letter; and besides, in the course of conversation, doubts may be stated and cleared which, though they may weigh heavily on your mind, can not be anticipated by mine. It must have struck you as something very mysterious in the scheme of Redemption that man, instead of having to trust to his own virtues for reward, and his own repentance for pardon, must look exclusively to the righteousness and atonement of the Savior. And yet so important is this doctrine, that the scheme of Salvation is inefficient without it; for, for what other cause did the Savior come into the world, or in what other sense could he be said to die for us? I have seen much of what may be called the working of this doctrine, and, unable as I am to comprehend it in the abstract, have admired its wonderful adaptation to the nature and wants of man. There is no place where its importance can be better appreciated than beside a death-bed. In the closing scene of life, man's boasted virtues become, in most instances, so intangible that they elude his grasp; and his sins, however little noted before, start up around him like so many threatening specters, to call up all his remorse for the past, and all his fears for the future. It is then that the scheme of Redemption appears worthy of the infinite wisdom and infinite goodness of a God; that the righteousness of Him, who ever went about doing good, appears an inexhaustible fund to which we may apply; that the agony in the garden, the mockeries and scourgings in the hall, the inconceivable sufferings and shame of the cross, array themselves on the side of mercy, and sum up efficacy enough to annihilate every sin. It is when every minor light of comfort is extinguished that the Savior shines forth, and more than compensates for them all.

"So much for the fitness of this scheme. I have stated that, regarded in the abstract, it surpasses my comprehension; but do not suppose from this that it is more surrounded by difficulties than any of the many schemes of religion which men have opposed to it. The simplicity of most of these is but an apparent simplicity, complete in the eyes of the shallow thinker, but which entirely disappears when subjected to the gaze of a superior discernment. True, the difficulties of Christianity may be more strikingly apparent than those of philosophic religions, but it is only because God in his goodness, instead of confining it to the acute and the highly talented, has brought it

down to the level of the whole race of man; and thus common capacities are brought in contact with truths of so lofty and abstruse a character that the greatest minds can but see their importance and consistency without being able to comprehend them. It is well, however, that the heart of the simplest can be made to feel their fitness; and that the excellence of doctrines too mighty to be grasped by the most capacious minds can be so appreciated by babes as to be made effectual to their salvation.

"After all our reasonings, my dear William, it is through the heart alone that we can lay hold of the Savior; and to prepare the heart, 'by working faith in it,' is the office of that Spirit which God giveth to all who ask it. Have you ever considered the doctrine of the Trinity, and the peculiar fitness which it gives to the character of God as a God of man? Perhaps the query is rather obscure; what I mean to express is this: One great proof of the wisdom of the Deity is derived from that exquisite adaptation of parts which obtains throughout creation. You have studied this in the human frame, and must have seen, in extending your view, that not more admirably are the parts of that frame fitted to each other than man as a whole is fitted to external nature. Now, by rising a little higher, and taking with you the Scripture character of a *triune* God, you will perceive that there is yet a third exquisite adaptation of the nature of man to the nature of the Deity,—what, indeed, we might expect, when we consider for what purpose, and in whose image, man was originally created. The subject far exceeds the limits to which I am restricted, but I must attempt giving you a brief outline of my meaning: In all true philosophy, God is regarded as the first *cause* of all things, and as *uncaused* himself. Necessarily, then, he must have existed from eternity, while every thing else must have *begun to exist;* and ere that beginning, he must have existed an eternity alone. But is this, his eternity of solitude, to be regarded as the womb of Deity, in which, though his thoughts might be employed (I am acquainted with only the language of earth), his affections lay dormant? Surely not. Who can think of a God of infinite goodness existing for an eternity without love? But love requires an object, and God existed alone. Yes; but when we feel that the ill-conceived God of the philosopher must, so circumstanced, have been a solitary being, we know that the God of the Christian existed in the society of himself—regarding the Son and the Spirit with an infinite love, and infinitely beloved by them. Is there not something wonderfully pleasing in this view of the character of God—something that harmonizes with our nature and all its affections of love, friendship, brotherly affection, filial attachment, and paternal regard? And then to think that all the persons of the adorable Godhead are interested in us, and perform a part in our redemption! The Father willed that the Son should be sent, the Son became man and died for us, and by the Spirit is the sacrifice made effectual to us, and our hearts pre-

pared. It is surely no marvel that angels desire to look into a mystery so fraught with the wisdom and goodness of Deity.

"Permit me again, my dear William, to recommend to you Jesus Christ as the only Savior. Open all your heart to him, for he is man and can sympathize in all its affections; trust yourself implicitly in him, for he is God, omnipotent to aid and unable to deceive. Faith can realize his presence, and there is happiness to be found in his society, when the full heart pours itself out before him, of which the world can form no conception. In life or in death, in health or in sickness, it is well to be able to lean one's self on him, as John did at the last supper, and to feel as it were the heart of his humanity beating under the broad buckler of his power. Whatever it may be your fate to encounter,—whether protracted, spirit-subduing indisposition, or that solemn and awful change so big with interest to the human heart, and so fitted to awaken its hopes and its fears; or whether you are to be again restored to the lesser cares and narrower prospects of the present life,—in whatever circumstances placed, or by whatever objects surrounded, you will find him to be an all-sufficient Savior, and the friend that sticketh closer than a brother. Would that I were more worthy to recommend him to you,—more like himself; but I know you will forgive me the freedom with which I write, and that you will not associate with his infinite wisdom and purity any of the folly or the evil which attaches to, my dear William, your sincere and affectionate friend,

"HUGH MILLER."

OFFER OF A SITUATION — RESOLVES TO ACCEPT IT — SAILS FOR EDINBURGH—INTERCOURSE WITH SIR THOMAS D. LAUDER—LINLITHGOW.

Many as are the happy circumstances which we have noted in Hugh Miller's life, it is to be remembered that, at the age of thirty-two, he still finds himself a stone-mason; and that he is ardently attached to a lady, whom he has inflexibly resolved not to marry while he continues to earn his bread by the labor of his hands. The scheme of emigration to America, almost insuperable as were his objections to it, begins to be again entertained. "My mother," says Mrs. Miller, "had at length agreed, if nothing suitable turned up, to give us three hundred pounds of mine, of which she had the life-interest; and with this sum we were to face the great wilderness." Such is Hugh's outlook towards the end of 1834; the final decision on the question of emigration being, I suppose, deferred until the volume of Traditions, of which we have heard so much, and which is now getting actually into the printer's hands, shall have seen the light.

One morning he sits down, by invitation, to breakfast with Mr. Robert Ross, just appointed agent of the Commercial Bank in Cromarty. Mr. Ross is a warm friend of Miller's, and has asked him

to his house on this occasion to have some talk on a matter of business. Mr. Ross mentions that he will want an accountant, that the young man who had been thought of for the situation can not find security, and that his guest may have the place if he will. Hugh is taken by surprise, and, with his usual diffidence, commences to make excuse. "I know nothing," he says, "of business, and very little of figures; there is not a person in the country worse qualified for the office." Mr. Ross understands his man, and persists. "Say, however, that you accept, and I shall become responsible for the rest." Hugh reflects for a few moments. "I thought of the matter; I remembered that no man was ever born an accountant; and that the practice and perseverance, which do so much for others, might do a little for me. The appointment, too, came to me so unthought of, so unsolicited, and there seemed to be so much of the providential in it, that I deemed it duty not to decline." This last was no mere conventional phrase on the lips of Miller. His religion, quiet and unobtrusive as it was, had impressed itself upon all his habits of thought and life. It had become the one thing essential to his happiness, that he should feel a Divine hand leading him. As usual in the changes of his life, he regarded the alteration in his circumstances with calmness and equanimity, deliberately glad to behold the prospect of life in Scotland with the woman he loved opening before him; but not forgetful of the tranquil hours, so rich in delicate enjoyment of heart and mind, which he had passed, mallet in hand, on the chapel brae of Cromarty, or in sequestered country church-yards, his thoughts busy with some problem of science, or thesis of philosophy, or newly discovered jewel of poetry, while nature prepared for him, in every changing aspect of the landscape, a fresh delight for eye and soul.

To be initiated in banking, it was necessary for him to proceed a second time to the south of Scotland. He sailed for Edinburgh, expecting to be taken into the office of the Commercial Bank there, but found, on his arrival, that he was to be stationed in the branch office at Linlithgow. He spent a few days in Edinburgh, both before going on to Linlithgow, and on his return thence; and experienced, on both occasions, great kindness from Sir T. Dick Lauder, Mr. Robert Paul, manager of the bank in Edinburgh, and others.

Hugh was no sooner out of sight of Miss Fraser than he began writing to her. He embarked after nightfall, November 27, 1834; the ship weighed anchor at dawn, and we find him, pen in hand, "tossing on the Moray Frith, on the swell raised by the breeze of the previous night."

A few days after reaching Edinburgh, the ardent lover and indefatigable correspondent writes that he has been to the Grange House, the residence of Sir Thomas Dick Lauder, and says of his reception with enthusiasm. "I can not express to you the kindness with which I was received. He scolded me for taking lodgings. Why not come

and live with him? And I was only forgiven on condition that, after arranging matters with the secretary of the bank, I should part with my landlady, and take up my abode at the Grange. 'I have a snug room for you,' he said; 'breakfast shall be prepared for you to suit your office hours; and in the evening I shall have you to myself. To-morrow you must come and dine with me; I shall get Black, the book-seller, to meet with you, and meanwhile I shall write him a note that will be at once an introductory one and an invitation.' He then introduced me to Lady Lauder and his daughters; showed me his library,—a capacious room, shelved all round, and rich in the literature of the past and the present. 'Here,' said he, 'Robertson, the historian, penned his last work; and here,' opening the door of an adjoining room,—'he died.' He next brought me to the leads of his house; pointed out the more striking features of the scenery; told, and told well, a number of little stories connected with it; showed me the extent of his lands—but I want space to enumerate. We parted."

Armed with Sir Thomas's note, he waits upon Mr. Adam Black, future Lord Provost of Edinburgh, and member of Parliament for the city, and is civilly received. Next day he starts for Linlithgow, and seems hardly alighted there, when his pen is again in requisition, to describe to Miss Fraser what occurred on the evening passed with Sir Thomas.

"LINLITHGOW, December.

"I do not know that I have any thing more amusing to communicate to you, my Lydia, than what passed during the evening I spent at Sir Thomas's. But I am afraid you will find me no Boswell. I would fain be a faithful chronicler; but, in attempting to record dialogue, the words always slip away, and only the ideas remain. My invitation was for six o'clock, the fashionable hour for dinner here; but, by missing the road in the darkness, I was, unluckily, rather late. The Grange House is built in the style of two centuries ago, with a number of narrow serrated gables, that break the light into fantastic masses, by their outjets and indentation; here a pointed turret, there coped with stone, and bearing the family crest atop; yonder an antique balustrade; and, directly in front of the iron-studded door, there are two time-worn columns with a huge dragon sprawling on each. The garden is in quite the same ancient style, planted by some old-world mason, with flights of stairs, cross-walls, and arches. The first thing that caught my eye on entering the lobby was a huge, carved settle, of dark-colored oak, with the bust of a mitred prelate frowning from the wainscoting over it; there were spears, too, resting against the wall, and in the antique staircase a host of old paintings of ladies, in strange, uncouth dresses, who were loved and married three centuries ago; and of their lovers and husbands, grim-looking fellows, with long beards and coats of mail. I was ushered into the

parlor, a splendid apartment, as lofty as any two of our Cromarty rooms placed over each other, and more capacious than any four, with a carved oak roof, paneled sides, antique wainscot furniture, and an immense profusion of paintings. Sir Thomas and Mr. Black were standing beside the fire, discussing the change in the ministry; Lady Lauder was seated at a work-table a little away. I was received by the lady very kindly, by Mr. Black very politely, by Sir Thomas as if we had been friends and companions for twenty years. The political conversation was then resumed. Sir Thomas remarked that if the Duke of Wellington calculated on the soldiery,—and he could not well see what else he could calculate upon,—he trusted he had mistaken their spirit. For the army, said he, is composed of the people, and in a time of peace like the present must be imbibing their opinions. I stated to him, in proof of what he remarked, that I had crossed the ferry of Fort George last summer with a party of soldiers, and was interested to learn, from their conversation, that many of them were acquainted with the periodicals, and fond of reading. And I question, I said, whether a reading soldiery be the best for doing every thing they are bid. Sir Thomas deemed the remark of some value, simple as it may seem. . . Sir Thomas showed us a highly interesting relic of Queen Mary,—a watch, formed like a human skull, which was presented by her to that Lady Seaton whom Scott has made the heroine of his Abbot. The upper part of the skull is richly embossed with figures; there is the crucifixion, the adoration of the shepherds, and several other Scripture scenes connected with the history of our Savior; on the sides there is a series of vignettes,—the frock without a seam, the nails, the scourge, the crown of thorns, and the spear. The workmanship is evidently French.

"Sir Thomas took up a volume, presented by Sir Walter Scott to Lady Lauder, and showed us Sir Walter's holograph on the title-page. 'This,' said he, 'I deem a valuable volume; and here is something I consider as equally so.' He opened a portfolio, and showed us the original plan and elevation of Abbotsford, also a present from Sir Walter to the lady. The conversation then turned on Sir Walter. 'I had some curious correspondence with him,' said Sir Thomas, 'shortly before his death. Contrary to the opinion he had formerly entertained, he then held with Dr. Jamison, that the Celts had never inhabited the south of Scotland. I instanced several Gaelic names of places in the south—among the rest that of his own Melrose, or the barren promontory—and he seemed reconvinced; but half his mind was gone at the time. Our Gaelic names,' continued Sir Thomas, 'are strikingly characteristic of either the scenery of the places which they designate, or of some incident in their history, so very remote, perhaps, as to lie beyond the reach of written records. I was led, after writing my essay on the parallel roads of Glenroy, to examine appearances on the course of the Findhorn, very similar to those of the highland glens. Among the rest there is a holm on the Relugas

property, round the sides of which I could trace very distinctly what seemed to have been at one time the shores of a lake; but what was my surprise when, on asking a Gaelic scholar for the etymology of the name of a field which occupies the upper part of the holm, I was informed that it was composed of two words which mean 'head of the loch.' Now, at how remote a period must not the name have been given?' I instanced some of our Cromarty names as apparently of very remote antiquity; stated that a moor in the upper part of the parish had, as shown by its cairns and its tumuli, been the scene of a battle at so early a period that history bears no recollection of the event, but that a farm in its vicinity still bears the name of *Achnagarne*, that is, field of the carcasses; and that a rock in the sea, which Sir Thomas, in his survey of the burgh, has marked out as one of its boundaries, and on which tradition says a boat was once wrecked, is still known as *Clach Mallacha*, that is, the stone of the curse. We had some conversation on the Celtic character. I described to Sir Thomas the form of the old Celtic head, as given us by the phrenologists, and as I have seen it in the skulls of the Inverness Museum; concluding my description by remarking that civilization seems to produce variety in the human species, somewhat in the manner that domestication produces it in some of the inferior animals. Sir Thomas seemed pleased with the thought, and illustrated it by a fact or two.

"He must have been a very busy man. He showed me his Travels in Italy in MS. They form four thick quarto volumes, elegantly bound, and illustrated with admirable crow-quill drawings. He showed me an elegant piece of penmanship, 'The Lamentable Case of Sir William Dick,' a thin folio, in which the old style of printing and engraving was so well imitated, that it was only from the freshness of the paper I detected it as a copy. This Sir W. Dick was one of his ancesters (Scott makes David Dean allude to him, in the Heart of Midlothian, as the godly provost), who was possessed, in the days of Charles I., of the then enormous sum of 200,000*l.*, but who lost almost all during the Commonwealth and the reign of Charles II. Sir Thomas stated to us besides that he had filled with notices of his family a roll of vellum about eighty feet in length. On Mr. Black and I rising to go away, he took down his large stick, and accompanied us—by way of guard, he said—for about half a mile, and on parting kindly repeated his invitation to me of coming to the Grange the moment I returned from Linlithgow.

"I do not know that you have ever seen Sir Thomas. He is a noble-looking, elderly man, upwards of six feet in height, very erect, with bold, handsome features, and a profusion of gray hair, approaching to white, curling round his temples. His head is a very large one, with a splendid development of sentiment. Benevolence, veneration, and ideality seem all of the largest size. Love of approbation and combativeness are also amply developed. His forehead is broad

and high; but the knowing organs are more powerful than the reflective ones. The contour of the whole is beautiful, and as much the reverse of common-place as any thing you ever saw.

"My trunk being too bulky for the coach, I took a berth in a canal-boat, which leaves Edinburgh at seven in the morning and reaches this place about ten. I saw little on the passage to interest me except the old castle of Niddrie, at which, as you will remember, Queen Mary passed the night after her escape from Loch Leven, and in which Scott has laid some of the scenes of the Abbot. My fellow-passengers were a Paisley shop-keeper and a Linlithgow farmer; the former a smart, shallow young man; the latter a shrewd, sagacious old fellow, with a decided cast of dry humor. On landing here, I found the bank-accountant, a Mr. Miller, waiting my arrival. He introduced me to Mr. Paterson, the agent. Both of them are exceedingly civil—nay more—kind young men; but the patience of both must be sorely tried ere I can have done with them. I am one of the stupidest blockheads you ever knew; and, considering how extensive your experience in this way must have been among your pupils, that is saying something. For the first day or two I felt miserably depressed and sadly out of conceit with myself. I do not know what I would not have given to have had you beside me to comfort me, but I dare say you would have begun by laughing at me. My lodgings here are much too fine and too expensive; but they were taken for me by Mr. Paterson at the request of Mr. Paul, who intimated my coming by letter, and so I could on no account decline them. I dislike expense even for its own sake, and independent of the embarrassment which it always occasions,—especially when 'tis incurred for a man's self, for food a little more delicate, and clothes a little finer, than ordinary. My disposition, too,—as the Edinburgh phrenologists will, I dare say, find,—leads me rather to acquire than to dissipate. . . . Remember, I expect a reply. You little know the exquisite pleasure which I derive from your letters."

In another letter he says to her: "Linlithgow forms, as you are aware, part of the great coal-field of Scotland, and there are pits on every side of it. The coal seems to have been formed out of vast accumulations of reeds, somewhat resembling in appearance, at least, the sugar-cane. To what a remote and misty antiquity do such appearances lead us! To a time in which the district in which I am now writing to you formed part of the delta of some immense river, which drained of its waters a widely-extended continent, the place of which is now occupied by the Atlantic. Think how many ages must have elapsed before the vegetable spoils of even the largest stream could have formed the depositions of so extensive a coal measure; how many more must have passed in which new accumulations of strata settled above these to a depth of many hundred feet—settled so slowly, too, that each layer formed a plain on which plants and animals flourished and decayed. Continue the history till

the immense continent was slowly worn away, and the sea beyond, enriched with the spoils of so many ages, became a scene of earthquakes and volcanoes; and then, after we have marked in imagination the retiring of the waters, and the ascent of a new continent from what had been the profounder depths of the sea,—after we are lost in calculating the periods which must have elapsed ere the ascent of one plutonic eminence was followed by that of another,—antiquity, as it regards the human race, has but its beginning. I find myself lost in immensity when I think of such matters. But I dare say you have quite enough of geology for one letter.

"The church of Linlithgow is a fine old building, well-nigh as entire in the present day as it was four centuries ago. In style it seems to hold a middle place between the simple Norman Gothic and the highly ornamental Gothic of the reign of Henry VII.; and there is a chastity in the design of at least the interior, which we may vainly look for in our modern imitation buildings. I never look up to a lofty stone roof without feelings of awe. Burke has said that fear is a necessary ingredient in the sublime. I do not know but that there is a lurking sensation of terror in the feeling which I experience; it does not owe its existence to the art in which, according to Thomson, 'greatest seems the little builder man.' I sit in the northern aisle every Sunday, beside a huge column, and directly opposite the gallery in which the specter appeared to James IV. The clergyman is a fine, useless preacher of the Moderate party, who gives us rather ordinary matter dressed up in pretty good language. He does not pray on Sabbaths, like our north-country ministers, to be 'preserved from thinking his own thoughts,' and may, indeed, spare himself the trouble—he has none of his own to think.

"The palace is situated a little behind the church. It is a huge, quadrangular pile, about sixty paces on each side, full of those irregularities which would not be tolerated in a modern building, but which, associated as they are with our conceptions of Scotland in the past, please more than elegance itself. There runs along the top a deeply-tusked cornice; the corners are crowned with turrets, and broken piles of building, which finely vary the outline a-top, and rise high above the outer wall on either side. The carvings are sorely time-worn, and they seem to have been grotesque enough when at their best. On either side of an old gateway, which was shut up in the reign of James VI., there are two Gothic niches, surmounted by miniature cupolas that resemble the models of an architect; at the base of each there is the figure stretching forth his hands, and writhing in agony, as if crushed by the superincumbent weight. The Scottish shield, guarded by angels, is blazoned on an immense tablet above. But decay has been busy with the guardians, and with what they guard. There is a large court in the interior, whose corners are occupied by lofty towers, through each of which a staircase leads to the top. The view inside is very striking; all the sides are unlike.

One of these was built in the reign of James VI.; and from the elegance and peculiar style of the architecture, I would deem it a design of Inigo Jones. The other sides are of a different character, and testify of an earlier age. The windows are square, and huge of dimensions, labeled a-top, and divided into compartments by mullions of stone. There is an uncouth profusion, too, of Gothic sculpture. In the middle of the court there are the ruins of a well, and beside it a hollow which must once have received its waters, and formed a little lake; but the stream has long since failed. I passed through a wilderness of arched passages, with windows darkened by mullions of crumbling stone, and grated with wasted iron. I have seen the room in which the unfortunate Mary was born. I have seen, too, the large hall in which our Scottish parliament sometimes assembled, with the stone gallery in which the beauties of other days have listened to the long-protracted and often stormy debate. I ascended to the top of the building, and from an elevation of nearly a hundred feet looked over the surrounding country. The palace is built on a grassy eminence that projects into the lake, which extends about half a mile on either side of it, and nearly as much in front. A curtain of little hills rises from the opposite shore, and shuts in the scene towards the north. To the south we see the town, and the long line of the canal, with its multitudinous bridges; and all around there is an undulating and freely diversified country, studded with abrupt, woody knolls of plutonic formation, and speckled with human dwellings. I need not tell you that, as I looked from the walls and saw so much of the antique and the venerable beneath me, and so much of the beautiful around, I wished for a companion to see all that I saw, and to feel all that I felt; nor need I say, my Lydia, what companion it was I wished for. Uncommunicated pleasure, you know, is apt to change its nature, and to become pain.

"Mr. Miller, our accountant here, is the son of a dissenting clergyman who died about four years ago. I have passed an evening, with Mr. Paterson, our bank agent, a frank, obliging young man (he is five years younger than I am), of much general information, and with none of the little pride of our north-country bankers in his composition. Among the many causes of gratitude which Providence has given me, the kindness which I every-where meet with is not one of the least.

"This is the country of historical associations and historical relics. I described to you the watch of Queen Mary. I have since seen two pieces of her needle-work. They are at present in the possession of my landlady, who was for many years housekeeper to a lady of quality, whose name I forget, and who, at her death, left her her wardrobe—the relics of Mary included. The one is an apron, the other a tippet, both of muslin, which was once white, but which now, both in color and in fragility, resembles a spider's web. The apron is a complex piece of work,—nearly as much so as the borders on which I have so

often seen you engaged; the tippet is simpler. You will laugh at me when I tell you that, all unpracticed in the art as I am, I am employed in making a pattern of it for you, that you may see how muslin was flowered in the sixteenth century, and bedeck yourself, should you deem it worth your imitation, in the same style of ornament with the beautiful Mary. I need not tell you I am no critic in such matters; it strikes me, however, that the flowering of both pieces has a grotesque, Gothic air, and differs as much from the needle-work of the present day, as the old castle of the sixteenth century does from the modern mansion-house. In the possession of such persons as my landlady, one frequently meets with interesting relics on the last stage of their journey to oblivion. The work-table on which I write is only about twenty inches square a-top; yet I am certain that top must have employed some skillful mechanic of a century ago for a full month. It is curiously inlaid with more than four hundred little pieces of colored wood and bone, and represents a flower-piece."

Later he writes: "I was only a few days in Linlithgow when a gentleman called on Mr. Paterson to inquire for me, stating that Principal Baird was at his country house, and very unwell, but desirous notwithstanding that I should call on him on the following Thursday. I then learned for the first time that the Principal's country house is not more than two miles from Linlithgow. I found the grounds in the vicinity of the house laid out into little patches, each bearing a different variety of field or garden vegetables, and altogether presenting the appearance of what is termed an experiment farm. Husbandry and gardening are two of his hobbies. The house is a little, old-fashioned structure. I was shown into a low parlor; the Principal was in bed, I was told, but was just going to try to get up. He found himself unable to rise, and I was shown up to his room. He received me with great kindness, held my hand between both his for more than ten minutes, and overpowered me with a multitude of questions,—particularly regarding my new profession and what had led to it. 'Ah,' said he, when I had given him what he requested,—the history of my connection with the bank,—'the choice of your townsman, Mr. Ross, shows that you still retain your character for steadiness and probity.' After sitting by his bedside for a short time, I took my leave, afraid that he might injure himself by his efforts to entertain me; for they were evidently above his strength. It struck me, too, that there was a tone of despondency about him which mere indisposition could not have occasioned. Benevolent old man! from what I have since heard, I have too much reason to conclude that his sickness is of the heart."

Miller proceeds to mention his having formed the acquaintance of a Mr. Turpie, at whose house he was introduced to a Dr. Waldie, both unknown to fame. "Mr. Turpie," he goes on, describing an evening passed in the company of these gentlemen, "took up a book, and showed me what he deemed a very old poem. I read a few

verses, and pronounced it to be a modern imitation. The decision led to a few queries, and the queries to a sort of colloquial dissertation on old Scottish poetry, a subject with which, you know, I am pretty well acquainted. I quoted Barbour, Dunbar, Gavin Douglas, Lindsay, and a great many others. The obsolete literature of our country was quite a *terra incognita* to all the party, but they seemed interested by the glimpse I gave them of it; and Mr. Turpie, when the conversation once more became general, asked me, half in simple earnest, half in the style of compliment (a question which, by-the-by, Mr. Paterson had put to me a few days before), 'Pray, Mr. Miller, are there any books which you have not read?' A few evenings after, the doctor and Mr. Turpie called on me at my lodgings. The former is a metaphysician, and he had come to me apparently with the intention of discussing what may be termed the metaphysics of phrenology: its connection, for instance, with the grand question of liberty and necessity, and the doctrines of the will. I communicated to him my ideas on the subject as clearly as I could; met his objections when they could be met; and showed him—I should rather say strove to show him—the boundaries of that horizon of darkness which, closing round the human intellect in this direction, renders many of them unanswerable, not because they are powerful as arguments, but because they can not be understood. We parted very well pleased with each other. 'The doctor,' said Mr. Turpie to me a few days after, 'can find no line long enough to measure you by; he has just met with a Dr. Baird, a nephew of the Principal, who tells him that his uncle is quite enthusiastic regarding you, and deems you equal to any thing.' But enough of this. Never in my life before did I write any thing so redolent of conceit as the last page and a half; but with you, my lassie, I know I am more than safe. Remember, too, I give you full liberty to laugh at me as much as you please."

"EDINBURGH.

Again in reply to Miss Fraser: "Dear me, what a red-hot Highlander you are! You make me say things against the poor Celt I never so much as thought of, merely, I suppose, that you may have the pleasure of defending him. Who ever doubted that the poems of Ossian were the compositions of a Scotch Highlander? Truly not I, nor any one else I ever heard of, except a few Irishmen. They were written by a countryman, every line of them,—bating the little bits that were borrowed from Milton and the Bible,—by a genuine countryman, who, though not over-endowed with honesty, equaled in genius any writer of his age. Ossian, indeed, or Oscian, as the Irish call him, was, as you know, a bog-trotter of the beautiful island, who made ballads in the days of the good St. Patrick, and sold them for half-pence a piece; but who can say that of MacPherson?

"Since you love Highlanders so well, I fain wish I could introduce you to my cousin, George Munro. I would not fear to match him, as

a specimen of what his country can produce, against your Alness Highlander or any Highlanders you ever saw. He resides with his wife and family in Stirling, and since I last wrote you I have spent a day with him. Let me describe him to you as he is, both in mind and person. He is a well-built, robust man of five feet eight, large-limbed, broad-shouldered, keen-eyed, and with resolution stamped on every feature. Nature has written *man* on his whole appearance in her most legible hand. But what I have to add, will, I am afraid, give you a lower opinion of him. No one ever regarded me as particularly well built or handsome. I am, besides, fifteen years younger than my cousin, and yet, through one of those tricks of resemblance so strangely occasioned by blood, I have been repeatedly addressed as Mr. Munro. His mind is one of the most restless and most concentrated in its energies I ever knew. He never yet attempted any thing which he did not master, and never mastered any thing of which he did not tire. He was born in the Highlands of Sutherland, and bred a mason; no one could have fewer opportunities of improvement, and yet he was not much turned of twenty ere he had added to the commoner rules of his art a knowledge of architecture, drawing, and the mathematics. The intellectual man is rarely an *athlete*, but George had a body as well as mind to educate, and after studying the mathematics he set himself to study the art of defense, and became so skillful a pugilist that there are few professed boxers who would gain in a contest with him. He resided at this time in Glasgow. On his return home, he married, and took a little farm on the banks of a Highland loch, where he proposed to himself to spend his days. But he soon tired of the agricultural life; it was too quiet and too monotonous, and, quitting the farm, he engaged as superintendent of some saw-mills erecting in that part of the country, and proved for some months, from his thorough, though hastily acquired, knowledge of the machinery, a most serviceable man to his employers. He sickened, however, at the ceaseless clatter of the wheels, and, throwing up his superintendency, he again resumed the mallet. He then became a slater, and proved one of the best in the country; but the details of the art were too soon mastered to engage him long. He next applied himself to Gaelic literature, and published a translation of Bunyan's Visions, which has been commended as true to both the spirit and sense of the original. He then spent some time in fruitlessly attempting to square the circle, in studying botany, and in the composition of a metrical tale. He then taught a school, and applied to the General Assembly to be admitted on their list of teachers; but was unfortunately unsuccessful. His next employment, unlike any of the others, was almost forced upon him,—he was nominated superintendent of a bridge erecting over the Forth, and acquitted himself with so much credit, that some of the neighboring gentlemen urged him to stay in that part of the country. George consented, and became a civil engineer. Lord Abercrombie requested

him to inspect, if he had courage enough, a copper mine in Airdrie, which had lain unwrought for many years, and which, damp and dark, and full of water and unwholesome gases, was deemed inaccessible by all the other engineers of the country. George knew very little of copper mines, but he furnished himself with a torch, and, without assistant or companion, explored the cavern to its inmost extremity, and then drew up a report which has since been successfully acted upon. Some works of an unusual and difficult character were projected last season on the river Dee. George undertook the superintendency of them, constructed a theodolite for himself, accomplished several difficult levelings, which a recent survey has proved to be correct, departed from the original plan, and executed the whole in a manner which the original designer has pronounced more complete and effective. An eminent lawyer has described his reports as at once the plainest and most rational ever presented to him; but George has become master enough of his new profession to long for another; and ere I parted from him he told me that he wishes much for some employment, such as that of a Gaelic teacher, which would afford him leisure to write a work on etymology.

"This is a curious portrait, but it is that of the individual, not that of the Highlander; a few strokes more, and you shall see it enveloped in tartan. Never was there man more zealous for the honor of his country; he finds more mind in her poets, and more meaning in her language, than in the language and the poets of every other put together. Ossian surpasses Homer, and nothing can be more absurd than to question the authenticity of his poems. He seems to have attached himself to him by a true Highland contract, and stands by him on all occasions in 'the right and the wrong.' To conclude, he has all the characteristic courage of his countrymen, and all their hospitality and warmth of heart. He accompanied me eleven miles on my way to Linlithgow, and as he shook my hand at parting, I saw the tear gather in his eye. Do not grudge him, my Lydia, the page and a half which I have devoted to him; nor chide me when I tell you that I read to him the part of your letter in which you describe the Alness Highlander and the Ross-shire clergy. His remark on your style you will deem a neat one. 'There are,' said he, 'more Mrs. Grants than one.'

"I saw much in my journey that interested me; never before did I pass over so large a tract of the classic ground of Scotland. Almost every stream and mountain in this district have been celebrated in song; almost every plain has been a field of battle. I stood at Bannockburn, on the stone where Bruce fixed his standard, and repeated to my cousin the spirited description of Barbour. I have seen the scene of Wallace's conference with the elder Bruce; that of the battle of Shirramuir, of Stirling Bridge, and of Falkirk; the tombs of Sir John the Graham, Sir John Stuart, and Sir Robert Munro; the site of the house in which James III. was assassinated; the room in

Stirling Castle in which his father, James II., stabbed the Black Douglas; the pulpit of John Knox; the Tor-wood in which Wallace so often sheltered from the English, and in which Cargill excommunicated Charles II.; the links of Forth, rendered classic by Macneil; and the distant peaks of Ben Lomond and Ben Ledi. Had I time for geological disquisition, I could tell you something curious of the valley of the Forth, and of some singular etymologies given me by my cousin, which, like the name of the holm mentioned by Sir Thomas, threw light on a very remote period. In founding the piers of the new bridge, the workmen dug through a layer, composed mostly of marine exuviæ, in which they found the skull of a wolf, with several other remains of a very early age,—the productions of art. There is an eminence that rises out of the bottom of the valley, quite in the manner that Inchkeith does out of the frith, which still bears in Gaelic the name of the Island, though now fully five miles from the sea; and a hollow that lies still farther up continues to be known as the Bay of the Anchors. But all these topics we shall discuss when we meet. Heigh-ho, my Lydia, we have missed many a happy meeting this winter!

"Since coming here I have made a very few accessions to my library. . . My own volume is getting on pretty well; I have returned proofs of the first two hundred pages; but I am afraid I have committed a sad blunder regarding it. Nothing could have been easier for me than to have rendered it an unbroken series of legendary stories; I have materials at will, and find no difficulty in narration. As it is, however, it abounds in dissertation; and holding, as it does, a middle station between works of amusement and abstract thinking, runs no small risk, I am afraid, of being neglected by the readers of both. Was it not strange that I should not have discovered this when the work was in manuscript? But it is, I believe, of almost general experience among writers, that their productions must appear in print before they can form an estimate regarding them at all approaching to correct. Lavater used to remark that his works, when in MS., appeared to him almost faultless, though no sooner had they passed through the press than he became frightened to look at them. Pope has expressed himself to nearly the same purpose. Well, the past can't be recalled, but I may trust that my fate is not staked on one throw, and that the next may be a better game.

"On Wednesday last I dined with Principal Baird, and have seldom spent an evening more pleasantly. He was in one of his happiest moods, and full of anecdote and remark. He seems to form a kind of connecting link between the literature of the past and of the present age. In his youth he was the friend and companion of men whose names leap to our tongues when we sum up the glories of our country,—of Burns and Robertson and Blair. Nearly fifty years ago, he edited the poems of Michael Bruce, in behalf of the mother of the poet, who was then very poor and very old,—childless, and a

widow. Twenty years after, he was the warm friend and patron of the linguist Murray. He was the first who introduced Pringle, the poet, to the notice of the public. He lived on terms of the closest intimacy with Sir Walter Scott, and is thoroughly acquainted with Wilson. What a stride from the times of the historian of Charles V. to those of the editor of 'Blackwood's Magazine!' Does it not sound somewhat strangely that the friend and contemporary of the amiable though ill-fated poet of Kinross, who died nearly sixty years ago, should be the warm friend of your own H—— M——? I need not tell you how very interesting I found his anecdotes. He gave me notes of his conversations with Burns, and of his correspondence with Scott. One of his remarks regarding the former in connection with somebody else, I am too vain to suppress. 'Burns,' said he, 'excelled all men I ever knew in force of genius; he leaped to his conclusions with a vigor altogether wonderful; but I do not agree with those who regard his mind as equally powerful in all its faculties. Any task that required prolonged and steady exertion was no task for him; and I have remarked that his good sense never reached the dignity of philosophy. The writer who chose so humble a theme as the "Herring Fishery of the Moray Frith," has, I dare say, never thought of entering the lists with Burns; nor, perhaps, could he produce such poems as "Tam o' Shanter" and the "Cotter's Saturday Night;" but, in tracing causes and deducing effects, Burns might just as vainly have entered the lists with him.'"

HIS FIRST PROSE BOOK—CORRESPONDENCE ON THE SUBJECT—LETTERS FROM MR. CARRUTHERS AND MR. R. CHAMBERS—RECEPTION AND CHARACTER OF THE BOOK—DONALD MILLER.

While initiating himself, not without irksomeness, into the routine of bank business, and astonishing Mr. Turpie by the extent of his reading, Miller occupied his spare moments in Linlithgow in correcting the proof-sheets of the "Scenes and Legends in the North of Scotland."* It was his first grand effort in prose, his first clear preference of a claim to have his name inscribed in the list of English authors. The "Poems by a Journeyman Mason" had been printed at his own expense, in Inverness. The "Letters on the Herring Fishery" had filled but a moderately sized pamphlet. Here, at last, was an unmistakable book, introduced to the reading world by publishing firms of the highest eminence in Edinburgh and London. We have had a glimpse of the difficulties encountered in bringing it this length, but what we have seen will not by any means represent to us their full extent, or the amount of exertion to which Miller submitted

*Reprinted in the United States by Wm. H. Moore & Co., sixteen years later, in 1851, after they published "Foot-prints of the Creator," from the Edinburgh edition, with a sketch of the author's life, by Sir David Brewster.

in the furtherance of his project. From his correspondence on the subject we shall take two or three additional passages, recollecting, while we read, that for at least two years he was engaged in the task of opening a way for the publication of his volume.

Here, first, is his account of the conception and plan of the book, as presented to his tried and faithful friend, Sir T. D. Lauder, so early as March, 1833: "In making choice of my subject, I thus reasoned with myself: White's 'Natural History of Selborne' is a most popular little book, and deservedly so, though Selborne itself be but an obscure parish somewhere in the south of England. The very local title of the work has not in the least militated against its interest. But why? Partly, it would seem, from the very pleasing manner in which it is written; partly because the natural history of even a single parish may be regarded as the natural history of the whole country in which that parish is included. And may not the germ of a similar popularity be found, if the writer do not fail in his part, in the traditional history of a Scottish village? Which of all the animals is a more interesting study than man? Or can those varieties of any of the numerous classes which we find in one district of country be more clearly identified with the varieties which we find in another, than we can identify with one another those multiform classes of the human character which, though every-where different in their minor traits, are every-where alike in their more important? Besides, the history of one Scottish village is, in some measure, the history of every one; nay, more, it may form a not unimportant portion of that of the kingdom at large.

The people of Scotland, in all its several districts, have been moving forward, throughout the last century, over nearly the same ground, though certainly not at the same pace; and a faithful detail of the various changes and incidents which have occurred during their march, from what they were in the past to what they are in the present, can not surely be merely local in its interest. What does it matter that we examine but only a little part of any thing, if from that part we acquire an ability to judge of the whole? The philosopher can subject but comparatively small portions of any substance to the test of experiment; but of how wide an application are the laws which he discovers in the process!

"You will perceive at a glance the conception I thus formed of my task was somewhat too high to leave me any very great chance of satisfying myself in the execution of it. I have not done so, and, indeed, could be almost sorry if I had. I have frequently met with an ingenious argument for the immortality of the soul, drawn from the dissatisfaction which it always experiences in the imperfect good of the present, and from its fondly cherished expectations of a more complete good in the future; and so long as I am dissatisfied with what I write, and with how I think, I solace myself, on a nearly similar principle, with the hope that I shall one day write better, and

think more justly. My traditional history, however, is, I trust, not a very dull one; it is a different sort of work, in some respects, from any of a merely local cast I have yet chanced to see; and I am of opinion, though I dare say I may be mistaken by that partiality which men insensibly form for any pursuit in which they have long been engaged, that a set of works of a similar character would not be quite without its use in the literature of our country. The occurrences of even common life constitute, if I may so speak, a kind of alphabet of invention,—the types, rather, which genius employs in setting up her forms. She picks them out in little broken bits from those cells of the memory in which they have been stored up, and composes with them entire and very beautiful pieces of fiction. And I am convinced a set of works similar in character to my manuscript history—from each district of the kingdom—would form a complete part of this kind. Might not such a set be properly regarded as a magazine of materials for genius to work upon?"

Allan Cunningham, in whom, as a brother of the hammer and a brother of the pen, Miller took a particular interest, and whom he obliged with the sketch of Black Russel, was applied to when the subscription scheme had been set on foot, in the hope that he might do something for the book in London.

"CROMARTY, August, 1834.

"For the last few years, I have devoted to the pen well-nigh all the hours I could spare from the mallet, and have produced a volume which I would fain see in print. It is traditional, and wants only genius to resemble very much some of your own. Our materials, at least, must have been collected in the same manner and from the same class,—in prosecuting a wandering employment in a truly interesting country, rich with the spoils of the past; in the work-shed, and the barrack, and the cottage, from old men and old women,—the solitary, fast-sinking remnants of a departed generation. But the mason of the north has no such creative powers as he of Galloway,—powers that can operate on a darkened chaos of obsolete superstitions and exploded beliefs, and fashion it into a little poetical world, bright and beautiful, and busy with passion and life. Still, however, my traditions are not without their interest, though possibly they may owe little to the collector. They are redolent of Scotland and the past, and form the harvest of a field never yet subjected to any sickle except my own. Our northern districts seem to have produced many that could invent, but none that could give their inventions much publicity; many that could *think* and *feel* poetry, but none that could *write* it; their literature is, consequently, an oral literature; their very history is traditional; they may be thought of as fields unreaped, as mines unopened; and must not some little interest attach to a work, however deficient as a piece of composition, that may properly be regarded as a sample of the grain,—a specimen of the ore? I trust,

however, that my mode of telling my stories will not be deemed very repulsive. I have had a hard and long-protracted struggle with the disadvantages attendant on an imperfect education. To you, at least, I need not say how hard and how protracted such a struggle must always prove; but I have at length, I trust, got on the upper side of them; and, if I eventually fail, it will be rather from a defect of innate vigor than from any combination of untoward circumstances pressing upon me from without.

"I publish by subscription,*—from the nature of the work and the obscurity of the writer, the only way open to me. But, trust me, I have no eye to pecuniary advantage; I would not give a very little literary celebrity for all the money I ever saw; besides, bad as the times are, I am master enough of the mallet to live by it. I could ill-afford, however, the expense of an unlucky speculation; and, as literature is not so much thought of in Cromarty as the curing of herrings, I find that, without extending my field, I can not securely calculate on covering the expense of publication. Forgive me that I apply to you. I am a pilgrim, passing slowly and heavily along the path which leads right through the wicket; now floundering through the mud of the *slough*, now journeying beside the hanging hill, now plodding through the low-lying grounds haunted by Apollyon. And what wonder that I should think often and much of one who has passed over the same tract, and who, undeterred by the dark valley or the enchanted grounds, with all their giants and all their wild beasts, has at length set him down amid the gardens of Beulah, in full view of the glorious city? . . . . My book-sellers in London are Smith and Elder, to whom, should you succeed in procuring a few names for me, the list may be transmitted."

Allan sent a few sensible and friendly words in reply. "I am glad that you think of publishing; for there is so much truth and nature and information in your writings, that they can not fail of doing your name a good turn. A work of the kind set forth in your prospectus will be welcome to all true-hearted Scotsmen; and, though limited in its range, will influence many who live besouth the Tweed. I have laid one of your printed intimations on the table of my book-seller, and desired him to mention it to his visitors. When the work appears I will say a good word for it with all my heart. I mentioned it to some friends here; but you must understand that the Londoners are not accustomed to put down their names for works of a literary nature, whatever the merit may be; but this must not discourage you; almost all authors sacrifice a work or two for the sake of having their merits made widely known. I did this; and now I find purchasers, though I found few at first. I desired our mutual friend Carruthers to place

*As authors often do now, by getting friends to subscribe before printing is begun; this, however, is not the American mode of publishing what are known as "subscription books."

my name among the subscribers long before you wrote to me. Your book-seller must send copies to most of the influential newspapers and reviews; a kind word from them saves an advertisement, and possibly helps the sale of the works. But take a brother-mason's as well as a brother-writer's advice: Don't be too solicitous about being noticed in reviews; let the thing take its course: a worthy work seldom fails."

One sample will suffice of the letters in which he applied to gentlemen of influence—landed proprietors, clergymen, leading merchants—in his district, to countenance his enterprise.

TO SIR GEORGE MACKENZIE, OF COUL, BART.

"Permit me to submit to your judgment the inclosed prospectus. I am acquainted with only your writings, and the high character which you bear as a gentleman of taste and science; but there is more implied in such an acquaintance than in a much closer intimacy with a common mind; and it is the knowledge I have derived from it which now emboldens me to address you.

"I am one of the class, almost peculiar to Scotland, who became conversant in some little degree with books and the pen amid the fatigues and privations of a life of manual labor. For several years past I have amused my leisure hours in striving to acquire the art of the writer, and in collecting and arranging the once widely spread, but now fast sinking, traditions of this part of the country. I have written much, that I might learn to write well, and have made choice, as the scene of my exertions, of a field so solitary and little known that I might not have to contend with laborers more practiced than myself; and I have found in this field much that I have felt to be interesting, and much that I deem original,—incidents of a structure wholly unborrowed, striking illustrations of character and manners, inventions not unworthy of poetry, and strongly defined traces of thought and feeling, which might afford employment to the philosopher.

"My amusements at length produced a volume which, though not quite such a work as I had conceived might have been written on the subject, I deemed not entirely devoid of merit. I submitted my MS., through Sir Thomas D. Lauder (a gentleman who has honored me by his notice and shown me much kindness), to some of the literati of Edinburgh. Their judgment regarding it has been favorable beyond my most sanguine anticipations. Still, however, the work is local in its character, and more exclusively so in its title, and in times like the present I can have nothing to expect from the book-sellers. But the circumstances which militate most against the general interest of the work must have some little tendency to impart to it a particular interest in the district of country whose traditions it relates, and whose scenery and general character it purports to describe. If, like a convex lens, the focus bears on only a narrow space, in that narrow space

the rays must be concentrated. For a work of this kind the mode of publishing by subscription is the only available one; and, after hesitating long,—for the scheme has often been resorted to in this part of the country by men of an inferior cast, inferior both in sentiment and intellect, and I was unwilling it should be thought that I had any thing in common with them,—I now betake myself to it. I would ill-like to risk my respectability as a man for the uncertain chance of being a little known as a writer; but there is surely nothing mean in a mode of publication which such men as Pope and Cowper and Burns have had recourse to. The meanness must consist not abstractedly in the scheme itself, but, when the work chances to be a worthless one, in the inveigling the public into what must be regarded as an unfair bargain. I have no eye to pecuniary advantage. My hopes and fears are those of the literary aspirant only; and, little known either as a man or a writer, my eye naturally turns to one whose favorable opinion, holding as he does so high a place in society and letters, would obtain for me the suffrages of the class best able to forward my little plan."

The disappointment experienced by Miller in procuring the publication of his book was confined to his attempts to induce a bookseller to undertake the risk of issuing it. No sooner did he adopt the plan of subscription than he met with encouragement and aid on all hands. Without any conscious effort, he had succeeded in inspiring every one who knew him with confidence, and those who knew him well were not only confident of his future, and proud of his abilities, but bound to him by strong personal attachment. He had shown himself friendly, and he had found friends who took delight in serving him.

At last Mr. Black agreed to publish on terms which, under the circumstances, must be pronounced generous. Miller received four hundred copies for his subscribers at cost price, and, in the event of profit being realized on the sale of the remainder of an edition of one thousand two hundred and fifty copies, was to share it with Mr. Black. The selling price was fixed at seven shillings and sixpence. On these terms, Miller would clear about sixty pounds, even if the unsubscribed copies should not sell. These terms were not arranged until after Mr. Black had met Miller in Edinburgh, and it is evident that he also had learned to believe that the Cromarty mason, just developing into a bank clerk, was a man with a future.

In the spring of 1835, then, the book was in the hands of the subscribers, and congratulations poured in upon Miller. He was in a mood of quiet satisfaction, wholly unimpassioned, nay, he was not without anxiety as to the loss which might be incurred by Mr. Black; his friends were joyful, cordial, exultant. Here is a heart-warming letter from Mr. Carruthers:—

"INVERNESS, April 17, 1835.

"Many thanks for your bonny little book. It was delivered to me yesterday evening about six o'clock, and I went through fully three-fourths of it before going to bed. Depend upon it, my dear fellow, you have made a *hit* this time. I don't say that the Legends will lift you into high popularity with all your robes and singing garlands just at once. Your fame will not come rushing on you like a *spate*. But the book will have a steady general sale, and will lay the foundation of a permanent literary reputation, destined, I trust, to go on increasing, and to be crowned with many honors.

"You are right in your remark about there being rather too much dissertation, especially in the first two or three chapters. This surplus, like that of the Irish Church, would have, perhaps, been better appropriated to other purposes; yet one soon becomes reconciled to it or ceases to consider it unnatural. I think you lack dramatic power, at least, your sketches of character struck me as inferior to the descriptive and moralizing passages. I should, however, except honest Donald Miller, who is equal to Washington Irving's happiest creations. The great charm of the book is, that it is full of original matter,—not concocted from other works, though you have much curious reading, too, but fresh and flowing, full of truth and nature. Taste, you know, is a plant of very slow growth, yet you have already outstripped our friend Allan Cunningham in this respect. Allan had better opportunities than you in his early days. His father had an excellent library, was an intelligent man, and mixed with intelligent people. Nay, the poet himself was turned of thirty, had been a reporter for the London press, and was almost necessarily well versed in critical lore, before he tried his hand at prose. Yet even his last work, his Life of Burns, is full of sins against right taste and delicacy of feeling. But, after all, your solitude and seclusion were your best teacher. We may wonder how you got your style,—so pure and vigorous; but it was your lonely communings with nature that fixed the matter in your mind, and gave it room to grow. You studied deeply and minutely all you heard, read, and saw, and thus came to your task fraught with thoughts, feeling, and knowledge, pondered over daily for years, and molded into perfect shapes. Your imagination had merely to supply a *coping* for this depository. But I am getting too *dissertative* myself. If the 'Edinburgh Review' is at your command, turn to one of the early volumes for a review of 'Cromek's Reliques,' and you will find some excellent observations of Jeffrey, on the peculiar position of Burns in his youth. Situation is as necessary for the proper growth of genius as of forest-trees; and I can not help thinking, my dear friend, that though your early lot has been hard, it has been favorable for the development of your mental power.

"It will be your own fault if you do not sail with full and prosperous gale. Your next appearance will be looked forward to with

interest, and will secure you good terms with your book-seller. Publishers are a fraternity wise in their generation, and I really think they will be casting out nets for you hereafter. I hope you will go on writing and accumulating materials. You speak of White's 'Selborne' as a sort of model. Your work resembles Crabbe's 'Borough,' and his general style, much more closely. The same faithful and minute painting of humble objects; the same love of the sea and all pertaining to it,—fishes, men, and marine scenery. Of course the characters are different, being modified by national and local circumstances. We of Scotland have the advantage in point of morality and staid demeanor. But Crabbe's poachers and navigators, with their strong, unbridled passions, are perhaps better fitted for poetry. What do you say to a series of sketches in verse of your Cromarty worthies, their characters, passions, and adventures? Of this, and fifty other subjects, I shall hear you speak, I hope, soon. When the sun gets warmer, and spring is leading (as Wordsworth finely says) her earliest green along the leaves, I shall steal away some Friday or Saturday, and ruralize with you on the hill-side over the bay. I hope sincerely that Wilson will shine on you with one of his long, laudatory, imaginative articles in 'Blackwood.' Adam Black will take every means of giving you publicity. But I see no fear of your success, so that the pushing of the trade will be the less necessary. I send you a capital review from the 'Spectator,' which you may not have seen. Tell me, from time to time, how you get on, and how the work goes off."

Miller sent at this time a copy of his book of poems to Mr. Robert Chambers, accompanying it with the following letter:

"The Moray Frith has been so blocked up this spring, by the westerly winds, that it is only now an opportunity occurs of sending you the Jacobite Psalm which I mentioned to you when in Edinburgh. It is by no means a very polished composition, but the writer was evidently in earnest; and in the closing stanzas there is an energy and power, united to much simplicity, which he must have owed rather to his excited feelings as a Scotchman and a Jacobite, than to his art as a poet. It has struck me as a curious fact, and one which I do not remember to have seen noticed, that almost all our modern Jacobites are staunch Whigs. Burns was a representative of the class, and I think I see from the verses of the poor Jacobite Psalmist, that had he flourished ninety years later he would have been a Whig too.

"Oblige me by accepting the accompanying volume. It contains, as you will find, a good many heavy pieces, and abounds in all the faults incident to juvenile productions, and to those of the imperfectly taught; but you may here and there meet in it with something to amuse you. . . . . My forthcoming volume, which I trust I shall be able to send you in a few weeks, will, I hope, better deserve your perusal. And yet I am aware it has its heavy pieces, too,—dangerous-looking sloughs of dissertation, in which I well-nigh lost my-

self, and in which I shall run no small risk of losing my readers. . . . . ."

To this there came, in due course, the following reply:

"ANNE STREET, EDINBURGH, March 31, 1835.

"I have just received your letter of the 19th inst., with the accompanying volume, of which I have already read a considerable portion. It is fortunate it arrived to-day, as I was about to write for another purpose than the acknowledgment of your letter; and it is better to kill two birds with one stone than a single one only. My object was to mention that I have read your history of Cromarty all to the last two chapters, being, perhaps, the fourth or fifth work of which I have read so much of these half dozen years. For a copy which has been sent to me, apparently by your order, I beg to thank you, but I had previously bought one, and was by that time far on in the perusal of it. Further, I have put an extract from it into our printer's hands, with a preliminary notice, in which I express my opinion of it; three weeks, however, must elapse before this can appear. I think you will not be displeased with the terms in which I have spoken of the volume and its author; at least, I am very sure that the notice is meant for the benefit of both. I dwell chiefly on the value which I conceive the book to have, as an example of the operations of a mind of deep reflection and sensibility, reared amidst humble scenes and circumstances, imperfectly educated, and in want of all appropriate material to act upon. Yet, while acknowledging that the reflection and the sensibility are often misspent, I take care to convey the impression that the book is a good one of the kind it professes to belong to, and calculated to afford much amusement to the reader, for I believe it would not be bought as a 'psychological curiosity' only. Between ourselves, I think it would have been better to retrench a good deal of the moralizing in the early chapters. I assure you, though not unaccustomed to philosophical reading, I find your thinking pretty hard and solid; it requires a little more time and pains to follow you than the most of us care to expend on a book of what we suppose light reading. The history of Cromarty!—you would have made a history of John o' Groat's house philosophical, I believe. Yours seems to be the true sort of mind to make minnows talk like whales. Such powers are not appropriate to topographical narration, or the chronicling of old stories. A playful fancy and a power of whimsical allusion answer these walks of literature much better. You are like a man assorting needles with a gauntlet. I must also mention to yourself that I have found a few little matters in your volume which can not be traditionary; such, for instance, as a George's Square in Edinburgh, some fifteen years before the actual erection of the place bearing that name; the numbering of houses, too, when there were no numbers; and the coming by the head of Leith Walk from Queensferry to Edinburgh. You speak of dates of the thirteenth and four-

teenth centuries on the front of Urquhart Castle, in connection with architectural styles, I am sure not much earlier than the seventeenth, and when I am equally sure that no dates were carved on houses in Scotland,—at least, far as I have ridden, and much as I have seen in my native country, I never saw a date upon a building earlier than the sixteenth century. This shows that you fill up and round off; and why not? but only such matters must be managed discreetly.

"I am much obliged by the Jacobite Psalm, which is certainly much above the tame poetry of the period. Your remark about the Jacobites has often struck myself. I account for their becoming Liberals in after-times, by the fact of Jacobitism at length becoming identified with a patriotic indignation at the corrupt government of the early Brunswick sovereigns, in which last character it must have very readily associated with modern Liberalism.

"I had thought of it as a duty to endeavor to give you some hints as to your future conduct in literature, such as a metropolitan may be sometimes able to give to a provincial. But now that I see your volume, I deem it needless to try. A mind such as you have the fortune to possess can hardly ever or anywhere be at a loss. I could hope, however, that you may keep in view the advantage, for your own happiness, of advancing into some more conspicuous situation in life, where the powers and tendencies of your mind may find more fitting scope and exercise than at present. For the attainment of such an end, great worldly prudence, and what people are now universally calling tact, are as essentially necessary as the bare possession of talent; and here I hope you will never be found wanting. With the best wishes for your happiness, under whatever circumstances, I remain, etc."

The Jacobite Psalm, referred to by Mr. Chambers, is what Miller describes as "a curious version of the one hundred and thirty-seventh Psalm, the production of some unfortunate Jacobite." . . . . .

"My legendary volume," says Miller in the "Schools and Schoolmasters," "was, with a few exceptions, very favorably received by the critics. Leigh Hunt gave it a kind and genial notice in his 'Journal;' it was characterized by Robert Chambers not less favorably in his; and Dr. Hetherington, the future historian of the Church of Scotland and of the Westminster Assembly of Divines, at that time a licentiate of the Church, made it the subject of an elaborate and very friendly critique in the 'Presbyterian Review.'" We have already referred to the remark on its style made by Baron Hume, and the eager delight of Miller at being recognized as a worthy successor of the Addisons and Goldsmiths, at whose feet he had loved to sit. The book "attained no great popularity;" but it crept gradually into circulation, and moved off "considerably better in its later editions than it did on its first appearance."

These words are likely to prove true for an indefinite period. This is one of those books which has to find its readers, but which, when

it has found, retains them by a charm like that of old friendship and of old wine. There is in it an aroma of racy thought and natural home-bred feeling. We may call it a bit of genuine historical literature, for it reproduces with vivid faithfulness the aspect of human life in one particular corner of the planet. The actual fields and waters, crags and woods, green dells and bleak moors, gray castles and thatched cottages, wimpling burns, and broomy braes, and brown sea-shores, beside which Miller has played since childhood, form the scenery of the drama; and, amid these, life goes masquerading in its coat of many colors,—life, with its fitful changes and abrupt contrasts, its heart-wrung tears and grotesque grins, its broken-winged sublimities and grandeurs tempered by absurdity; its queer jumble of tragedy and comedy, and merry scorn of all the unities. The writing is, perhaps, too careful for full display of strength. Miller lingered for many years over his stories, copying and recopying,—here polishing down a roughness, there throwing in a touch of color; now rounding a sentence with more subtle curve, now drawing out a similitude with more elaborate precision, grudging no labor and no time. In this kind of work his arm could not show its sweep and power. In much of his subsequent writing there is a rapid force, a rhythmic energy, which we do not find in the Addisonian periods of his first prose book. But in quiet, delicately wrought perfection; in beauty fine as the tints of a shell, as the veining of a gem, as the light and shade of a cameo,—Miller never surpassed, if he ever equaled, some parts of this volume. The hint of Mr. Carruthers as to its defect in dramatic power is not without pertinency and justice. Hugh had trained himself to narrative, and was comparatively unskilled in dialogue; but the essential element in dramatic power, the ability to realize human character and feeling in different situations, is certainly displayed in the "Scenes and Legends." The characters live. We see them; occasionally we hear them, and what they say is characteristic; it is mainly the dramatic form, not the dramatic substance, that is wanting.

To illustrate the careful finish of this book, it would be easy to find a number of passages, exquisite descriptions of landscape, specially felicitous similitudes, apt and eloquent reflections; but to select from these one or two brief enough for quotation, and decisively the best to be had, would be exceedingly difficult. We therefore refer the reader to the work itself.

It is, perhaps, worthy of mention that, in his researches into the history of his native district and of its remarkable men, he had come upon evidence that he had the blood of Sir Thomas Urquhart, of Cromarty, in his veins. Far too proudly contemptuous of such a title to distinction to specify the fact in his published writings, he nevertheless referred to it, when the matter turned up in conversation, as incontrovertible. The chapter devoted to Sir Thomas in the "Scenes and Legends" describes him as a man of genius and learn-

ing, but fantastic, speculative, and eccentric in the highest degree. He flourished in the times of the Covenant and Commonwealth.

DEATH OF MISS DUNBAR.

During those months which Miller passed in Linlithgow, his friend, Miss Dunbar, lay on her death-bed, slowly sinking under intolerable agonies. She retained her faculties unimpaired, and in the intervals of pain manifested that gracious interest in all that concerned her friends, which characterized her in health. Her malady was known to be incurable, but it does not appear that Miller was aware of any reason for apprehending that it would soon have a fatal termination. He continued, therefore, to write to her in the light, discursive manner he had previously adopted.

"LINLITHGOW.

"I must try to *coin* time (the phrase is poor Henry Kirke White's, who killed himself in the process), in which to show you that the hurry of my new occupation is as unable to dissipate the recollection of your kindness as the rougher fatigues of my old one. The more I see of life the more I am convinced that 'it is not in man that walketh to direct his steps.' Here am I in Linlithgow, acquiring that degree of skill in business matters that may fit me for a bank accountant. Six weeks ago I had as much thought—nay, more—of emigrating to the wilds of America.

"I would much rather have spent in Edinburgh the few weeks I have to pass in this part of the country than here; but it was necessary, in order to acquire the skill of the branch-accountant, that I should remove to a branch bank; and, as I take care never to quarrel with necessity, I get on pretty well. . . ."

Miss Dunbar writes in reply, under date of January 1, 1835, in which she says:

"It is now two o'clock, and I am but just up and dressed, and this is my first occupation. I heard of your appointment from the newspaper, and of your having gone to Edinburgh, from an acquaintance. Pardon me, my dear friend, some sad thoughts—I may even call them bitter ones—I will own I had, amid all the pleasure which both circumstances afforded me. I have always borne much goodwill to my acquaintance and friends in general; there are few whom I absolutely dislike, and not a few whom I really like much; but there was always one who more particularly occupied my heart, and whom I loved more than all the rest put together, and for the last five years you have been that one; and now that I have so short a time to be here, I can have no hope of ever again seeing you. But I assure you the sad, bitter thoughts were but passing ones; and your letter gave me entire pleasure.

"There is scarcely any one I am sorry to part with but you. God

knows how ferventiy I wish you life and happiness, and your advancement in public favor. I consider your late appointment as very respectable, and as procured for you in the most agreeable and delicate manner, but can not help regarding your literary pursuits as the main business of your life. When, probably, will your book be out? or is it actually gone to press? Many a time I have wondered to myself if ever I shall see it, and have sometimes hopes that I may; but were I to be guided by my present feelings of pain and discomfort, I should say the thing is not very likely. . . . You are not aware of Lord Medwyn's high appreciation of your genius. It was to his brother, Mr. John Forbes, that Major Cumming Bruce lately transmitted one of your letters and extracts from your 'Traditional History,' given him by the Messrs. Anderson, in four franked covers. The major had sent to me, as a thing of course, for your address, that Mr. Forbes might have waited on you; but I could give him no clue. . . . ."

Before writing the next letter, Miller heard that Miss Dunbar had just lost by death two near relatives to whom she was much attached. The thought of her bereavement recalled to him his own sorrow for departed friends, and in pensive mood, tenderly sympathetic, deeply affectionate, he took pen in hand, and described to her his experience of grief. If we would understand the enthusiasm of love with which all who knew Hugh Miller well regarded him, we ought to consider carefully the heart-delineation of this letter:

"CROMARTY, March, 1835.

"Intelligence of your sad bereavement reached me through the medium of the newspapers. I can not express what I felt. I knew that your cup was full before,—full to the brim; but I saw that, regarding it as mingled by your Father, you were resigned to drink. Now, however, a new ingredient has been added,—an ingredient bitterer, perhaps, to a generous mind than any of the others. To days of languor and nights of suffering, torn affections and blighted hopes have been added; and those relatives to whom the overcharged heart naturally turns for solace and sympathy are equally involved in misfortune. When we sit during the day in a darkened chamber, we have but to throw open a casement and the light comes pouring in; but it is not so during the night, when there is no light to enter. You were before sitting in the shade,—not, however, in so deep a recess but that at times a ray reached you from without; but I now feel that your sad bereavement must have converted your day into night; that you are sitting in darkness, and that an atmosphere of darkness surrounds you.

"I am not unacquainted with grief. There are friends separated from me by the wide, dark, impassable gulf, whom I can not think of even yet without feeling my heart swell. . . . Grief, my dear madam, is an idolater. It first deifies, and then worships. It has a

strange power, too, of laying hold of the moral sense, so that it becomes a matter of consequence with us to deny ourselves all pleasure, and to reject all comfort, in what we deem justice to the deceased. There is something wonderful in the feeling I have not yet seen explained. It seems to have its seat deep in the mysterious parts of our nature, and constitutes a tie to connect, as it were, the living with the dead. No man who truly deserves the name can desire to die wholly unlamented; and the regret which the heart claims for itself, it willingly—oh, how willingly!—renders to another. We weep not for ourselves, but in justice to the lost, and even after exhausted nature can not yield another tear, there is a conscience in us that chides us for having sorrowed so little. I need not ask you if you have experienced this feeling; no heart was ever truly sorrowful without the experience of it. It is a sentiment of our nature that lies contiguous, if I may so express myself, to that noble sentiment which leads us, independent of our reasonings, to *feel* that there is a hereafter. For do we not think of the dead to whom we owe so many tears, as a being who exists; and could we owe any thing to either a heap of dust or a mere recollection? It may be well, however, to remind you that there is a time when the claims of this moral sense should be resisted. It continues to urge that tribute be given to the dead long after the tribute is fully paid, and spurs on exhausted nature to fresh sorrows, when the voice of duty and the prostration of the energies call it to repose. . . . .

"I shall not urge with you the commoner topics of consolation; I know the heart will not listen even when the judgment approves. Grief is a strange thing; it is both deaf and blind. Where could it be more perfectly pure from every mixture of evil and folly than in the breast of our Savior? and yet even in him we see it finding vent in a flood of tears, when he must have known that he whom he mourned as dead was to step out before him a living man. Can I, then, hope to dissipate your sorrow? Can I urge with you any argument of consolation equally powerful with the belief which he entertained? or, were I possessed of some such impossible argument, could I hope that it would have more influence with you than that belief had with him? He believed, and yet he wept. May I not remind you, however, that he who sorrowed then can sympathize in our sorrows now; that he loved little children, and declared that of such is the kingdom of heaven; and that he has enjoined us, through his servant, not to sorrow at those who have no hope?"

At about the same time, perhaps in the very hour, when this letter was put into the hand of Miss Dunbar, the "Scenes and Legends," for which she had looked with a solicitude more tenderly intense than that of Miller himself, reached Forres. The heart of the sweet and gentle lady thrilled once more amid her anguish with a joy like that of a mother when she knows that a beloved son, whose efforts she has long watched, with whom she has long hoped and feared, whose

claim to a place of honor among men she has never questioned, has at last done something which will compel the world to own that he is all *she* knows him to be. Miss Dunbar wrote Miller the following touching letter, probably the last she ever penned:

"I know you wish to hear from me, and in gratifying you I would gratify myself, for I have much to say to you, but, alas! the power of writing is past. My intervals of ease from most excruciating pain are truly like angel visits; and when they do occur I am in such a state of lowness and exhaustion as to be incapable of any exertion. I am now raised up, and supported in bed by pillows, while I make this, I fear, last effort to write to you. . . . What can I do, but throw myself on His mercy who is the Sent of God? He is my rock, my strength, my hope in life and in death. Often do I wish to see you, and to hear you speak of the things which pertain to eternity. I recollect the light and comfort I derived from your conversation last summer. . . . But to the Book; contrary to all my anticipations, I have lived to have it in my hand! What shall I say of it? It would seem, from the very little of it I have yet read, as if I were quite satisfied with seeing and handling it. I look into every chapter, I glance over the whole, but somewhat childlike, I feel too happy to read."

Hugh, with no suspicion that the end was near, had begun his reply to this letter, and finished two or three pages, when he received the following notice: "Forres, June 30, 1835. Miss Dunbar, of Boath, died here last night at half-past ten o'clock."

In a letter written, a few days subsequently, to Sir Thomas D. Lauder, Miller refers to Miss Dunbar as follows:

"My kind friend, Miss Dunbar, of Boath, is dead; she died on the evening of Monday, the 29th ultimo. For the last four years her life has been one of much suffering; but she had a youthfulness of spirit about her that availed itself of every brief cessation from pain. She had learned, too, to draw consolation and support from the best of all sources; and so, her latter days, darkened as they were by a deadly and cruel disease, have not been without their glimpses of enjoyment. Her heart was one of the warmest and least selfish I ever knew. It was not in the power of suffering, or of the near approach of death, to render her indifferent to even the slightest interests or comforts of her friends. I was employed in writing to her, and with all the freedom which her goodness permitted me, when the letter reached me which intimated her death. My thoughts were so cast into the conversational mold that I could almost realize her presence; and, had she suddenly expired before me, I could not have been more affected."

We must not quit this episode in Hugh Miller's life without the remark that it reveals much of what he was. The sister of Sir Alexander Dunbar, Bart., of Boath, moving in the most refined and cultivated society of Scotland, Miss Dunbar was in every sense a lady.

Her penetration and sound literary judgment might have convinced her that Miller was a man of genius, and led her to desire his acquaintance; but that that acquaintance should have ripened into friendship—nay, that she should have signalized the journeyman mason as the truest and dearest of all her friends—can be accounted for only on the supposition that there was in him a sterling worth, a delicate nobleness, a beaming purity of soul, and dewy tenderness of feeling, which would have marked him out in any class of society as one of nature's gentlemen.

LETTERS TO MISS FRASER, FINLAY, AND DR. WALDIE.

On returning from Linlithgow to Cromarty, Miller addressed himself with assiduity to his duties as a bank accountant. In the course of the bank's operations, a sum of money, amounting to some hundreds of pounds, was transmitted weekly from Cromarty to Tain, and he thought it necessary to act as messenger. He walked the whole way from the northern shore of Cromarty ferry to Tain, and back; and, as part of the road lay through a deep wood, he provided himself with a brace of pistols, and traveled with them loaded. This was the first occasion of his using fire-arms; and he seems to have never subsequently, except, perhaps, for brief periods, abandoned the practice. The resolute intensity of application with which he mastered the details of banking, and the conscientious caution with which he took the road, in order to obviate mishaps in the transmission of the money, may be noted as characteristic of our man.

The change in his circumstances, when he thus passed out of what is termed the working class, was naturally pleasing to his friends. Mr. Stewart declared, with hearty satisfaction, that he was "at length fairly caught." For his own part, he took the matter with conspicuous quietness, betraying no consciousness of having risen in life, not altering his demeanor by one jot or tittle, and, except in his thoughts of the future of domestic felicity, which was now virtually secure to him, not finding himself a happier man. After a day spent in the uncongenial drudgery of running up columns of figures, he did not experience in literary composition that delicious freshness which it had formerly yielded him. "For the first six months of my new employment," he says, "I found myself unable to make my old use of the leisure hours which I found I could still command. There was nothing very intellectual, in the higher sense of the term, in recording the bank's transactions, or in summing up columns of figures, or in doing business over the counter; and yet the fatigue induced was a fatigue, not of sinew and muscle, but of nerve and brain, which, if it did not quite disqualify me for my former intellectual amusements, at least greatly disinclined me towards them, and rendered me a considerably more indolent sort of person than either before or since. It is asserted by artists of discriminating eye, that the human

hand bears an expression stamped upon it by the general character as surely as the human face; and I certainly used to be struck, during this transition period, by the relaxed and idle expression that had on the sudden been assumed by mine. And the slackened hands represented, I too surely felt, a slackened mind. The unintellectual toils of the laboring man have been occasionally represented as less favorable to mental cultivation than the semi-intellectual employments of that class immediately above him, to which our clerks, shopmen, and humbler accountants belong; but it will be found that exactly the reverse is the case, and that, though a certain conventional gentility of manner and appearance on the side of the somewhat higher class may serve to conceal the fact, it is on the part of the laboring man that the real advantage lies. The mercantile accountant, or law-clerk, bent over his desk, his faculties concentrated on his columns of figures, or on the pages which he has been carefully engrossing, and unable to proceed one step in his work without devoting to it all his attention, is in greatly less favorable circumstances than the plow-man or operative mechanic, whose mind is free though his body labors, and who thus finds in the very rudeness of his employment a compensation for its humble and laborious character. And it will be found that the humbler of the two classes is much more largely represented in our literature than the class by one degree less humble. Ranged against the poor clerk of Nottingham, Henry Kirke White, and the still more hapless Edinburgh engrossing clerk, Robert Ferguson, with a very few others, we find in our literature a numerous and vigorous phalanx composed of men such as the Ayrshire Plowman, the Ettrick Shepherd, the Fifeshire Foresters, the sailors Dampier and Falconer, Bunyan, Bloomfield, Ramsay, Tannahill, Alexander Wilson, John Clare, Allan Cunningham, and Ebenezer Elliot. And I was taught at this time to recognize the simple principle on which the greater advantages lie on the side of the humbler class." The unfavorable influence of his new occupation on his literary activity proved to be of a temporary nature. "Gradually," he proceeds, "I became more inured to a sedentary life, my mind recovered its spring, and my old ability returned of employing my leisure hours, as before, in intellectual exertion."

Once more, therefore, we may pronounce him happy. A time which, to him, seemed doubtless long, was still to elapse before his union with Miss Fraser, but the engagement was now fully countenanced by her mother, and the intercourse of the lovers was constant and unconstrained. William Ross was in his grave; John Swanson was about to leave the district; his friendship with Miss Dunbar had become a tender and exalting reminiscence. He clung all the more closely to her who was yet left to him, in whom he found the affection of Ross, the mental stimulus of Swanson, the sympathy of Miss Dunbar, and who was dearer to him than them all. As Miss Fraser resided almost uninterruptedly in Cromarty, there is not much in the

way of correspondence between her and Hugh to throw light upon their intercourse at this period; but we have one or two letters, through which, as through "luminous windows," we can see into the "happy palace" of love and friendship in which these two abode. Here is a note from the lady:

"My own Hugh, I am tired, tired of being away from you. Alas! you have no idea of the frivolous bondage to which sex and fashion subject us. I do nothing all day, and hear nothing, yet I am obliged to take the time from sleep which I devote to you. I have found the young captain whom I threatened you with much handsomer than I described him to you, but a thousand times more insipid. Why, when I look at him, do I always think of you? or why do his black, bright eyes, that would be fine had they meaning, always remind me of those gentle blue ones which I have so often seen melt with benevolence and a chastened tenderness? Why are mankind such slaves of appearances as to admire the casket and neglect the gem? It is degradation to the dignity of thought and sentiment to compare it with a mere beauty of form or color. Good-by.

"It is morning, but I am not beside you on the leafy hill, with the blue water shimmering at our feet. When shall we be there again?"

When this letter reached Cromarty, Hugh was in Tain, but he evidently lost no time in replying to it on his return.

"CROMARTY, July, 1835.

"I need not tell you at this time of day how much it is in your power to make me happy, and how thoroughly my very existence seems to be bound up in yours. I have but one solace in your absence, my Lydia,—that one thought of your return.

"There crossed with me in the ferry-boat a little ragged gypsy boy, the most strongly marked by the peculiar traits of his tribe I almost ever saw. Have you ever observed the form of the true gypsy head? I am much mistaken if it be not the very type of the Hindoo. In the line of the nose the forehead is perfectly perpendicular, indicating, I should think, a large development of comparison; but causality is less marked, and the whole contour is one of little power. It is not, however, the sort of head one would expect to find on the shoulders of a savage, more especially of the savage who can continue such in the midst of civilization. On reaching the school-house, I learned that John (Swanson) had resigned the school in consequence of an appointment to the mission at Fort William. I find that, in a pecuniary point of view, he is to gain almost nothing from the change. The salary does not exceed sixty pounds a year, and he is to be furnished with neither house nor garden. But it is to open to him a wider field of usefulness, and to John that is motive enough. He is, in the extreme meaning of the term, what Bonaparte used to designate with so much contempt, an *ideologist*, that is, a foolish fellow who does

good just because it is good, and for the pure love of doing it. I feel, however, very anxious on his account regarding the mission. The part of the country to which he is going is said to be wretchedly unwholesome,—full of lakes and marshes, and infested with miasma; and sometimes, when I consider the exhaustive fervency of his spirit and the weakness of his frame, I can not avoid fearing that I may have yet to think of him in connection with a solitary Highland church-yard and a nameless grave. Poor William Ross! he is now seven years dead, and were I to lose John also, where might I look for friends of the same class,—men who, attached to me for my own sake alone, could regard me in every change of circumstances with but one feeling? And John, too, is more than *my* friend. He is, my own Lydia,—and I love him ten times the more for it,—he is *ours*.

"I pursued my journey from the school-house in the morning, and, in passing through the deep, dreary wood of Culrossie, found myself, as I supposed, quite on the eve of an adventure. I carried with me a considerable sum of money,—several hundred pounds,—and that I might be the better able to protect it had furnished myself with a brace of pistols, when lo! in the thickest and most solitary part of the wood up there started two of the most blackguard-looking fellows I ever saw. They seemed to be Irish horse-jockeys. One wore a black patch over his eye and a ragged straw hat; the other a white frieze jacket, sorely out at the elbows; and both were armed with bludgeons loaded with lead. I had time enough ere they came up to cock both my pistols. One I thrust under the breast-flap of my coat, the other I carried behind my back, and, sheering to the extreme edge of the road with a trigger under each fore-finger, I passed them unmolested. One of them regarded me with a sardonic grin. My posture, I suspect, must have seemed sufficiently stiff and constrained for that of a traveler."

He next touches upon some book purchases in which he and his correspondent have a common interest. "There is a neat pocket-copy of Johnson's Lives that will do well for the beech-tree; I have besides got a copy of 'Paley,' similar to the one you had from Mrs. I——; a copy of Smollett's 'Humphrey Clinker' (my heart warmed to this book,—for, though many years have passed since I last perused it, it was one of my earliest favorites), and a minute copy of 'Childe Harold.' I saw, in Douglas's, Leigh Hunt's Journal. The notice of our little book is a highly gratifying one; is it not well that it is the highest names who praise it most? Hunt characterizes it as 'a highly amusing book, written by a remarkable man, who will infallibly be well known.' I am placed side by side with Allan Cunningham; there is a *but*, however, in the parallel, which I suspect Allan will not particularly like. 'But,' says Hunt, 'Mr. M——, besides a poetical imagination, has great *depth of reflection;* and his style is so choice, pregnant, and exceedingly like an educated one, that if it betrays itself

in any respect to be otherwise, it is by that very excess; as Theophrastes was known not to have been born in Attica by his too-Attic nicety.'

"My poor friend, Miss Dunbar, of Boath, is dead; she died on the evening of Monday, the 30th of June. The severe and ever-recurring attacks of her cruel disease had undermined a constitution originally good, and it at length suddenly gave way under the pressure of what seemed to be comparatively a slight indisposition. She is gone, and I have lost a kind and attached friend. But it would be selfish to regret that suffering so excruciating as hers should have terminated; for months past I could think of her only as a person stretched on the rack, with now and then, perhaps, a transient glimpse of enjoyment,—for such is the economy of human feeling, that every cessation from suffering is positive pleasure to the sufferer; but what, alas! had she to anticipate in this world save pang after pang in prolonged and direful succession, nights of pain and days of weariness, and at length the opening of a door of escape, but only that door through which she has just passed? I trust, my own Lydia, that it is well with her. Her heart was in the right place; it was ever an affectionate one,—perhaps too exquisitely so; but it seems finally to have fixed on the worthiest of all objects. She had learned to look for salvation through Him only in whom it is alone to be found. There are many whom suffering has the effect of so wrapping up in themselves that they can feel for no one else. But it was not thus with Miss Dunbar; she could think, even when at the worst, of the little comforts and interests of her friends; half her last letter to me is occupied with a detail of what she had thought and heard regarding my Traditions. I was engaged in writing her when the note was brought me which intimated her death.

"I have got a rather severe cold, which hangs about me. Never was cold better treated than mine; it eats and drinks like a gentleman. A shop-keeping acquaintance gives it liquorice, Mr. Ross gives it bramble-berry jam, Mrs. Denham has given it honey, and now Mrs. Fraser has sent it a pot of tamarinds. 'Twill be a wonder if, in such circumstances, it goes away at all. I have begun, but barely begun, my statistical account of the parish; it must, I am afraid, be both dull and commonplace, for I am alike unwilling either to repeat myself, or to anticipate any of my better materials for a second volume of 'Scenes and Legends,' and the residue is mere gossip. Even were it otherwise, my abundance, like the wealth of a miser, would have the effect of rendering me poor. Had I but a single story to tell, I would tell it; but who would ever think of telling one of a hundred?

"I have no words to express to you, my own Lydia, how much I long for your return, or how cold a looking place Cromarty has become since you left it. Ordinary pleasures and lukewarm friendships do well enough for men who have not yet had experience of the intense and the exquisite, but to those who have they do not seem pleasures

or friendships at all. I am amusing myself, however, just as I best can; sometimes picking up a geological specimen for my collection, sometimes making an excursion to the hill or the burn of Eathie. I accompanied to the latter place, on Saturday last, Mr. Ross and his children, with two of their cousins, the Joyners. We were all thoroughly wetted, and thoroughly amused; we told stories, gathered immense bunches of flowers, incarcerated a light company of green grasshoppers, who were disorderly, and ruined two unfortunate born beauties of the butterfly tribe. We, besides, ran down a green lizard. I have picked up of late, in the little bay below the willows, a fossil fish, in a high state of preservation; the scales, head, tail, fins, are all beautifully distinct, and yet so very ancient is the formation in which it was found, that the era of the lias, with all its ammonites and belemnites, is comparatively recent.

"You are fretted, my own dear girl, by the bondage to frivolity which sex and fashion impose upon you. No wonder you should, when one thinks of the sort of laws by which you are bound. The blockheads are a preponderating majority in both sexes; but somehow in ours the clever fellows contrive to take the lead and make the laws, whereas I suspect that in yours the more numerous party are tenacious of their privileges as such, and legislate both for themselves and the minority."

In the letter from Miss Fraser, to which our next from Miller is a reply, there occurred several descriptive sketches of the scenery amid which she was at the time, and an allusion to the Rev. Mr. Fraser, of Kirkhill, who had just lost his life by a fall from his gig. The passage in which Hugh refers to the early writings of David Urquhart and the threatening ambition of Russia, is curious, when viewed in connection with the issue of Russian scheming in the Crimean war.

"I am thinking long for you, dearest, and for the last week have been counting the days; counting them in the style of the fool whom Jacques met in the forest: 'To-day is the 19th, the 20th comes to-morrow, and the 22d will be here the day after;' they will creep away one by one, and Lydia will be with me ere they bring the month to an end. My heart is full of you; full of you every hour, and every minute, and all day long. I walked last Saturday on the hill and saw our beech-tree, but lacked heart to go down to it; I thought it looked dreary and deserted, and I felt that, were I to lose you, it would be, of all places in the world, the place I could least bear to see. Your grave—but how can I speak of it!—would be a place devoted to sorrow, but to a sorrow not sublimed into agony. I could clasp the green turf to my bosom, and make my bed upon it; but our beautiful beech-tree, with its foliage impervious to the sun, and its deep, cool recess, in which we have so often sat under the cover of one plaid,—I could not visit it, Lydia, unless I felt myself dying, and were assured I would die under its shadow. Many, many thanks, dearest, for your kind, sweet letter. It is just what a letter should

be, with heart and imagination and pretty, easy words in it, and yet it is an unsatisfactory thing after all. Instead of consoling me for your absence, it only makes me long the more for you. It is but a pouring of oil on a flame that burnt fiercely enough before.

"I have seen one of the scenes you describe so sweetly,—the bridge of Ardross; but it is a good many years since, and it was after I had just returned from the western Highlands of Ross-shire, where I had visited many scenes of a similar character, but on a much larger scale; and so, I was not so much impressed by it. I still remember, however, the dark rocks and the foaming torrent, and the steep slopes waving with birch and hazel, that ascends towards the uplands, and the abrupt, heathy summit of Foyers overlooking the whole. I trust your guides did not forget to point out to you the two majestic oak-trees of this wild dell, that are famed as by far the finest in Ross-shire. One of them has been valued at one hundred pounds sterling; and not many years since, when the late Duke of Sutherland purchased the estate of Ardross on which it grows, there was a road cut to it that he might go and see it. You are now in the parish of Urquhart with good Mr. Macdonald. There is not much to be seen in your immediate neighborhood. Do not omit visiting, as it is quite beside you, the ancient burying-ground of Urquhart. See whether there be not yet an old dial-stone on the eastern wall, beside a little garden. I saw it there fourteen years ago, and the thoughts which it suggested have since traveled far in the stanzas beginning 'Gray Dial-stone.'

"I am happy, dearest Lydia, that you are not going to Cadboll. Typhus is still raging, I hear, in that part of the country. My own dearest lassie, why am I so much more anxious on your account than on my own? But it is always thus when the heart takes a firm grasp of its object. Man, in his colder moods, when the affections lie asleep, is a vile, selfish animal; his very virtues are virtues so exclusively on his own behalf, that they are well-nigh as hateful as his vices. But love, my dearest, is the fulfilling of the law; it draws us out of our crust of self, and we are made to know through it what it is to love our neighbor not merely as well but better than ourselves. We err grievously in those analogies by which we attempt to eke out our knowledge of the laws of God through an acquaintance with the laws of man; and quite as grievously, and in the same way, when we strive to become wise by extinguishing our passions. The requirements of the statute book are addressed to the merely rational part of our nature; and could one abstract the reason of man from the complex whole of which he consists, that single part of him would be quite sufficient for the fulfillment of them. But it is not so with the law of Deity; it is a law which must be *written on the heart*, and it addresses itself to our whole nature; or, to state the thing more clearly, it is not more a law promulgated for man's obedience than a revelation of his primitive constitution, and, through grace, this constitution must be in

some degree restored ere the law, which is as it were a transcript of it, can be at all efficient in forming his conduct.

"Are you aware that wild deer sometimes swim across wide estuaries, such as the Frith of Cromarty? It was only last week that some of our boatmen found a fine roe swimming across to the Black Isle side, nearly opposite the church of Rosskeen, and fully three-quarters of a mile from the nearest shore. It is still alive, and in the keeping of Mr. Watson. My uncle tells me that in calm weather deer not unfrequently cross the opening of the bay from Sutor to Sutor; and that when he was a boy there was a fine large animal of this species captured by some fishermen when swimming from the Black Park, near Invergordon, to the Cromarty quarries, where the frith is fully five miles in breadth.

"I have seen of late some highly interesting articles on the political designs of Russia, by David Urquhart, of Braelanguel, a talented young fellow, better acquainted with the details of the question than perhaps any other Briton of the present day. It is wonderful with what art this mighty empire has been extending and consolidating its power for the last century. Should it go on unchecked for half a century more, civilized Europe must fall before it, and the world witness, a second time, the arts and refinements of polished life overwhelmed and lost in a deluge of northern barbarism. The democratic principle, says Hume, is generally strongest among a civilized people; the thirst of conquest, among a semi-barbarous one. Urquhart shows me that the Russians of the present time are strongly possessed by the latter, and never, certainly, was the democratic principle stronger in civilized Europe than now. Witness the struggles of the antagonist parties in France, Austria, and Italy, and to what extremes Whigs and Tories carry matters among ourselves. And the democratic principle has this disadvantage, when contemporary with the other, that it leads men to seek their opponents at home, and draws their attention from abroad. And hence they may remain unwarned and disunited until warning and union be of no avail. But forgive me, I am boring you with politics; remember, however, that I do not often transgress in this way."

Readers will recollect Finlay, the gentle, rhyming boy, who had been of the Marcus Cave band, and to whom Miller had been ardently attached. Seventeen years had passed away since he left Cromarty, and it does not appear that any tidings of him had reached Hugh in the interval. One day, however, he was surprised by the arrival of a letter dated Spanish Town, Jamaica, signed by the hand of Finlay. He had often, he said, thought of writing, but he had fancied that Miller had left Scotland, being convinced that, had he remained in his native country, he must have distinguished himself. "Often," he proceeds, "have I looked into the advertising columns of 'Blackwood,' 'Fraser,' and 'Tait,' to see the announcement of a volume of poetry, tales, or something to show that genius was not confined to

the south, and at length I was yesterday gratified by seeing your name in a stray number of *Chambers' Journal* for last year as the author of the 'Traditionary History of Cromarty.' You have no idea, my dear fellow, how my heart glowed when I read your praises; and, with the whole Scotsman running riot in my veins, have I reveled in the story of Sandy Wright (there is some of it like my own, *entre nous*), so like the benevolent heart of my ain Hugh Miller."

This was a great occasion for Miller. The image of his boy-friend lay in his heart like a coin of pure gold committed to a delicate casket, and when he looked upon it after seventeen years the likeness was bright as on the morning when he bade Finlay adieu. He seized his pen and wrote as follows. As we read this letter can we help loving Hugh Miller?

"CROMARTY, OCT. 15, 1836.

"MY OWN DEAR FINLAY:—Yes, the wise old king was quite in the right. 'As cold waters to the thirsty soul, so is good news from a far country.' My very hopes regarding the boy-friend, whom I loved so much and regretted so long, have been dead for the last twelve years. I could think of you as a *present existence* only in relation to the other world; in your relation to this one merely as a recollection of the past. And yet here is a kind, affectionate letter, so full of heart that it has opened all the sluices of mine, that assures me your pulses are still beating, and shows me they desire to beat forever. I can not tell you how much and often I have thought of you, and how sincerely the *man* has longed after and regretted the friend of the *boy;* you were lost to me ere I knew how much I valued and loved you. I dare say you don't remember that shortly before you left Cromarty you scrawled your name with a piece of burnt stick on the eastern side of Marcus Cave, a little within the opening. I have renewed these characters twenty and twenty times; and it was not until a few years ago, when a party of gypsies took possession of the cave, and smoked it all as black as a chimney, that they finally disappeared. Two verses of the little pastoral you wrote on leaving us are fresh in my memory still—fresh as if I had learned them only yesterday. But I dare say at this distance of time you will scarce recognize them.

"'Ye shepherds, who merrily sing
And laugh out the long summer day,
Expert at the ball and the ring,
Whose lives are one circle of play,—

"'To you my dear flock I resign,
My colley, my crook, and my horn;
To leave you, indeed, I repine;
But I must away with the morn.'

"There they are, just as you left them in the winter of 1819.

What, dear Finlay, have the seventeen intervening years been doing with your face and figure? The heart, I know, is unchanged; but what like are you? Are you still a handsome, slender, high-featured boy, dressed in green? John Swanson is a little black *manny* with a wig; and I have been growing older, but you won't believe it, for the last eighteen years. Great reason to be thankful, I am still ugly as ever. Five feet eleven when I straighten myself, with hair which my friends call brown, and my not-friens, red; features irregular, but not at all ill-natured in the expression; and immense head, and a forehead three-quarters of a yard across. Isn't the last a good thing in these days of phrenology? And isn't it a still better thing that a bonny sweet lassie, with a great deal of fine sense and a highly cultivated mind, doesn't think me too ugly to be liked very much, and promises to marry me some time in spring? Do give me a portrait of yourself first time you write, and, dearest Finlay, don't let other seventeen years pass ere then. Is it not a wonder we are both alive? John Layfield, John Mann, David Ross, Andrew Forbes, Adam McGlashan, Walter Williamson, are all dead,—yes, Finlay, all dead. Of all our cave companions, only John Swanson survives. John is a capital fine fellow. He was quite as wild a boy, you know, as either of ourselves, and perhaps a little worse tempered; but, growing *good* about twelve years ago, he put himself to college with an eye to the Church, and is now a missionary at Fort William. Dearest Finlay, have you grown *good* too? I was in danger of becoming a wild infidel; argued with Uncle Sandy about cause and effect and the categories; read Hume, and Voltaire, and Volney, and all the other witty fellows who have too much sense to go to heaven; and was getting nearly as much sense in that way as themselves. But John cured me; and you may now say of me what Gray says of himself: 'No very great wit, he believes in a God.' The Bible is a much more cheerful book than I once used to think it, and has a world of sound philosophy in it besides.

"Do you remember how I stole you from John? You were acquainted with him ere you knew me, and used to spend almost all your play-hours with him on the *Links*, or in his little garden. But I fell in love with you, and carried you off at the first pounce. And John was left lamenting! I brought you to the woods, and the wild sea-shore, and the deep, dark caves of the Sutors, and taught you how to steal turnips and peas; and succeeded (though I could never get you improved into a robber of orchards—though you had no serious objection to the fruit when once stolen) in making you nearly as accomplished a vagabond as myself. Are not you grateful? 'The boy,' Wordsworth says, 'is father to the man.' If so, your boy-father was a warm-hearted *bonnie laddie*, worthy of all due honor from you in your present filial relation; but as for mine, I can't respect the rascal, let the commandment run as it please. Don't you remember how he used to lead you into every kind of mischief, and

make you play truant three days out of four? A perfect Caliban, too:—

> "'I'll show thee the best springs, I'll pluck thee berries,
> And I, with my long nails, will dig thee pig-nuts.'

But he's gone, poor fellow! and his son, a much graver person, who writes a highly sensible letter, has a thorough respect for all his father's old friends, and steals neither peas nor turnips. Fine thing, dearest Finlay, to be able now and then to play the fool. I wouldn't give my nonsense—to be sure the amount is immensely greater—for all my sense twice told.

"You give me the outlines of your history, and I must give you those of mine in turn. But they are sadly unlike. You have been going on through life like a horseman on a journey, and are now far in advance of the starting-point. I, on the contrary, have been mounted, whip and spur, on a hobby, and after seventeen years' hard driving, here I am in exactly the same spot I set out from. But I have had rare sport in the fine ups and downs, and have kept saddle the whole time. You remember I was on the eve of becoming a mason apprentice when you left me. The four following years were passed in wandering in the northern and western Highlands, and hills, and lakes, and rivers, one of the happiest and most contented, though apparently most forlorn, of stone-masons. I lived in these days in kilns and barns, and on something less than half a crown per week, and have been located for months together in wild, savage districts, where I could scarce find, in a week's time, a person with English enough to speak to me; but I was dreaming behind my apron of poets and poetry, and of making myself a name; and so the toils and hardships of the present were lost in the uncertain good of the future. Would we not be poor, unhappy creatures, dear Finlay, were there more of sober sense in our composition and less of foolish hope? In 1824 I went to Edinburgh, where I wrought for part of two years. I was sanguine in my expectations of meeting with you. I have looked a thousand times after the college students and smart lawyer clerks whom I have seen thronging the pavement, in the hope of identifying some one of them with my early friend. On one occasion I even supposed I had found him, and then blessed God I had not. I was sauntering on the Calton on a summer Sabbath morning of autumn, when I met with a poor maniac who seemed to recognize me, and whose features bore certainly a marked resemblance to yours. I can not give expression to what I felt; and yet the sickening, unhappy feeling of that moment is still as fresh in my recollection as if I had experienced it but yesterday. Strange as it may seem, I gave up from this time all hope of ever seeing you, and felt that, even were you dead,—and I had some such presentiment,—there are much worse ways of losing a friend than by death.

"After returning from Edinburgh I plied the mallet for a season or two in the neighborhood, working mostly in church-yards,—a second edition of Old Mortality,—and then did a very foolish thing. I published a volume of poems. They were mostly juvenile; and I was beguiled into the belief that they had some little merit by the pleasing images and recollections of early life and lost friends which they awakened in my own mind through the influence of the associative faculty. But this sort of merit lay all outside of them, if I may so speak, and existed in relation to the writer alone; just as some little trinket may awaken in our mind the memory of a dear friend, and be a mere toy of no value to every body else. My poems, like the Vicar of Wakefield's tracts on the great *monogamical* question, are in the hands of only the happy few; they made me some friends, however, among the class of men whose friendship one is disposed to boast of; and at least one of them, 'Stanzas on a Sun Dial,' promises to live. Chambers alludes to it in the notice to which I owe the restoration of a long-lost friend. The volume which, maugre its indifferent prose broken into still more indifferent rhyme, and all its other imperfections, I yet venture to send you, is dedicated to our common friend, Swanson; but, being as tender of his name as my own, the whole is anonymous. In the latter part of the year in which it appeared, I sent a few letters on a rather unpromising subject, the Herring Fishery, to one of the Inverness newspapers. They were more fortunate, however, than the poems, and attracted so much notice that the proprietors of the paper published them in a pamphlet, which has had an extensive circulation. I send it you with the volume. Every mind, large or small, is, you know, fitted for its predestined work; some to make epic poems, and others to write letters on the Herring Fishery.

"I continued to divide my time between the mallet and the pen till about two years ago, when I was nominated accountant to a branch of the Commercial Bank, recently established in Cromarty. I owe the appointment to the kindness of the banker, Mr. Robert Ross, whom I dare say you will remember as an old neighbor, and who, when you left Cromarty, was extensively engaged as a provision merchant and ship owner. I published my last, and I believe best, work, 'Scenes and Legends of the North of Scotland,' shortly after. Some minds, like winter pears, ripen late; and some minds, like exotics in a northern climate, don't ripen at all, and mine seems to belong to an intermediate class. Sure I am it is still wofully green, somewhat like our present late crops; but it is now twenty per cent. more mature than when I published my former volume, and I flatter myself with the hope that, if winter doesn't come on too rapidly, it may get better still. Read, dear Finlay, my 'Scenes and Legends' first; you may afterwards, if you feel inclined, peep into the other two as curiosities, and for the sake of lang syne; but I wish to be introduced to you as I am at present, not as I was ten years ago.

The critics have been all exceedingly good-natured, and I would fain send you some of the reviews with which they have favored me (these taken together would form as bulky a volume as the one on which they were written), but I have only beside me at present the opinion expressed by Leigh Hunt (the friend and coadjutor of Byron, you know), and the notice of a literary paper, *The Spectator*. These I make up in the parcel.

"Where, think you, am I now? On the grassy summit of McFarquhar's Bed. It is evening, and the precipices throw their cold dark shadows athwart the beach. But the red light of the sun is still resting on the higher foliage of the hill above; and the opposite land, so blue and dim, stretches along the horizon, with all its speck-like dwellings shimmering to the light like pearls. Not a feature of the scene has changed since we last gazed on it together. What seem the same waves are still fretting against the same pebbles; and yonder spring, at which we have so often filled our pitcher, comes gushing from the bank with the same volume, and tosses up and down the same little jet of sand that it did eighteen years ago. But where are all our old companions, Finlay? Lying widely scattered in solitary graves! David Ross lies in the sea. John Man died in a foreign hospital, Layfield in Berlin, McGlashan in England, Walter Williamson in North America. And here am I, though still in the vigor of early manhood, the oldest of all the group. Who could have told these poor fellows, when they last met in the cave yonder, that 'Eternity should have so soon inquired of them what Time had been doing?'

"Regard, my dear Finlay, my 'Scenes and Legends' as a long letter from Cromarty. Do write me a little newspaper. Tell me something of your mode of life. Give me some idea of a Jamaica landscape. What are your politics? What your creed? What have you been doing, and thinking, and saying, since I last saw you? Tell me all. Your letter is the greatest luxury I have enjoyed for I know not how long."

The Dr. Waldie, of whom we heard as a friend of Miller's in Linlithgow, wrote to him after his return to Cromarty, and received a reply. The science, or sham science, of phrenology, was then making much noise in the world, and Hugh was for some time disposed to trust in it. The examination of his own head by a professional phrenologist did not tend to confirm him in his prepossessions; and, as he had argued with Dr. Waldie in favor of phrenology, he hastened to lay before the doctor those grounds on which he was now constrained to question its pretensions.

"I think with much complacency of our little discussions on phrenology and geology and all the other *ologies*, and of the relief which I used to derive from them when well-nigh worn out with the unwonted employments of the desk. You will, I dare say, be disposed to smile when I tell you that I am not half so staunch a

phrenologist now as I was six months ago, and be ready to infer that my head did not prove quite so good a one as I had flattered myself it should. Nay now, that is not the case: the head did not prove quite as good a one, scarcely inferior in general size to that of Burns, and well developed both in front and atop. I am more disposed to quarrel with the science for what it confers upon me than for what it withholds. For instance, few men are so entirely devoid as I am of a musical ear; it was long ere I learned to distinguish the commonest tunes, and, though somewhat partial to a Scotch song, I derive my pleasure chiefly from the words. Besides, and the symptom is, I suspect, no very dubious one, of all musical instruments I relish only the bagpipe. Judge, then, of my surprise to learn from Mr. Coxe (and I warned him to be wary) that Nature intended me for a musician. You are aware that twenty is the highest number in the phrenological scale; the proportional development of music in my head is as sixteen. But if more than justice be done me as a musician, in other respects I have cause to complain. The organ of language is more poorly developed than any other in the head. One, of course, can't claim the faculty one is said to want with as much boldness as one may disclaim the faculty one is said to possess; but you will forgive me if I produce something like testimony on the point. The effects of an imperfect development of language, say the phrenologists, are a difficulty of communicating one's ideas to another from a want of expression, which frequently causes stammering and a repetition of the same words, and a meagerness of style in writing. But what say the critics in remarking on my little book? 'What we chiefly found to admire,' says one, 'is the singular felicity of the expression.' 'The wonder of the book,' says another, 'lies in the execution; there is nothing of clumsiness, and the style is characterized by a purity and elegance, an ease and mastery of expression, which remind one of Irving, or of Irving's master, Goldsmith.' The *Presbyterian Review* and Leigh Hunt testify to a similar effect. 'But has not vanity something to do in calling in such testimony?' Nothing more likely; still, however, the evidence is quite to the point; and, as I have, perhaps, in some little degree influenced *your* opinions regarding phrenology, I deem it proper thus to state to you the facts which have since modified my own. The rest of the forehead, regarding as an index of mind, has its discrepancies. Causality is largely developed; wit—will you believe it?—still more largely; whereas comparison and individuality are only moderate. Now, I know very little of my own faculties if this order should not be reversed. Individuality, or the ability of remembering facts, if I be not much mistaken, takes the lead, comparison comes next, causality follows, and wit at a considerable distance brings up the rear. I find little to remark regarding the rest of the head; constructiveness, benevolence, conscientiousness, firmness, ideality, and caution, are all large; self-

esteem is moderate, love of approbation is amply, but not inordinately, developed, and the lower propensities are barely full. You see it is not altogether my interest to become a skeptic to the reality of the science; but my opinions regarding it have, notwithstanding, undergone a considerable change. Phrenology, however, whatever conclusion the world may ultimately arrive at regarding it, will be found to have had an important use. It has brought the metaphysician from the closet into the world, and turned his attention, hitherto too exclusively directed to the commoner operations of our nature, as these may be observed in the species, to the wonderful varieties of individual character.

"I am glad you have read Edwards. He stands high as a philosopher, even with those who differ with him. Sir James Mackintosh, in his masterly dissertation on Ethics, describes his reasoning powers as 'perhaps unequaled, certainly unsurpassed, among men.' Nothing so common among thinkers of a low order as what are termed common-sense objections to the Scripture doctrine of predestination; from minds capacious enough to receive the arguments of Edwards, we have none of these. But the man who studies him would need be honest. No sincere lover of the truth was ever the worse for his admirable reasonings, and religious men have been often the better for them; but they may be converted by the vicious into apologies for their indulgence of every passion, and the perpetration of every crime.

"I trust you will recommend me to Mr. Turpie. Ask him if he remembers how he used to mar my calculations by getting astride of my shoulders, and my many threats of beating him, which he learned to treat with so thorough a disregard."

In the course of the summer of 1835, Miller was applied to for contributions to the "Tales of the Borders," a periodical series begun by Mr. J. Mackay Wilson, and highly and deservedly popular. Wilson had died, and the publication of the Tales was continued for the benefit of his widow. Hugh consented, and a sufficient number of sketches and tales from his pen to fill a considerable volume appeared in the series. His entire remuneration, as he informs us in the "Schools and School-masters," was five pounds.

MARRIAGE — CORRESPONDENCE — DEATH OF DAUGHTER — VIEWS ON BANKING.

On the 7th of January, 1837, Hugh Miller was married to the lady whom he had so long and so ardently loved. Mr. Ross, his superior in the bank and attached personal friend, gave away the bride, and Mr. Stewart performed the ceremony. It was a day to make Hugh's heart, calm as he was in all things, profoundly calm as to his own achievements and successes, glow with honorable pride and well-earned joy. He had dared, while in his mason's apron, to aspire to the hand

of one who was by birth and breeding a lady. The attractions of personal beauty, enhancing those of a cultivated mind and graceful and animated manners, had led him captive, and for the first and last time, in all the intensity of meaning that can be thrown into the word, he loved. This affection had been for him an inspiration, turning the current of his existence into a new channel, and rippling its smooth surface with the genial agitations of hope. He had waited five years, and at times he had been anxious and despondent, for he never wavered in his determination either to marry Miss Fraser into the position of a lady or not to marry her at all. He had now established himself in all points essential to right success in life, and might contemplate the future in a mood of quiet assurance. He had made his mark in the literature of his country. He had passed into the ranks of the brain-workers of the community, depending no longer for livelihood on the toil of his hands. Any bride might now be proud of him. What was very pleasant for him at the time, and is pleasant for us to contemplate from this distance, his ascent had been viewed with unaffected satisfaction by his fellow-townsmen and by all who knew him. He had approved himself a thoroughly friendly man, and he had been rewarded by the good-will and kind wishes of many friends. On the occasion of his marriage his happiness was heartily shared in by the people of Cromarty, and the married pair drove off on their wedding trip in the carriage of Mrs. Major Mackenzie, which she had offered, some time before, to her friend Miss Fraser.

"Setting out," says Miller, "immediately after the ceremony, for the southern side of the Moray Frith, we spent two happy days together in Elgin; and, under the guidance of one of the most respected citizens of the place,—my kind friend Mr. Isaac Forsyth,—visited the more interesting objects connected with the town or its neighborhood."

His wedding gift to his wife was a Bible, on which he inscribed a few stanzas expressive of pious joy, deep but not exultant. Under such auspices Hugh Miller set up his household in Cromarty. His salary was but sixty pounds a year, and the addition which he made to it by literary contributions was as yet small. Mrs. Miller continued to take a few pupils. A parlor, bedroom, and kitchen had been furnished, and one servant did the menial work. An attic room was occupied with shelves, on which his few books and fossils, the nucleus of a good library and a valuable museum, were arranged. A table and chair were placed in this room, and it became Hugh's study. It was here that he wrote a number of tales and sketches, published in the continuation of Wilson's "Tales of the Borders." The dreary, semi-intellectual routine of a bank clerkship somewhat damped his literary ardor. His mind, however, gradually regained its elasticity, and he soon found more lucrative employment as a writer for *Chambers' Edinburgh Journal.*

The month in which he was married had not yet come to an end when he learned that John Swanson had lost his mother. To comfort his friends in their distress was always a sacred duty with Hugh, and he at once wrote him.

On the 12th of September of the same year we find him writing to Mr. Robert Chambers, offering one or two pieces for the *Journal*. "I am leading," he says, "a quiet and very happy life in this remote corner, with perhaps a little less time than I know what to do with, but by no means overtoiled. A good wife is a mighty addition to a man's happiness; and mine, whom I have been courting for about six years, and am still as much in love with as ever, is one of the best. My mornings I devote to composition; my days and the early part of the evening I spend in the bank; at night I have again an hour or two to myself; my Saturday afternoons are given to pleasure,—some sea excursion, for I have got a little boat of my own, or some jaunt of observation among the rocks and woods; and Sunday as a day of rest closes the round.

"Your collection of ballads I have found to be quite a treasure,—excellent in itself as a most amusing volume, and highly interesting, regarded as the people's literature of the ages that have gone by. You now occupy the place in relation to the people which the metrical historians and the authors of the ballads did a few centuries ago."

To this there came a reply warmed by that true-hearted kindness with which Miller's correspondent has cheered so many of the youthful soldiers of literature. "The account you give me of your domestic condition is necessarily gratifying to one who feels as your friend, and is anxious to be regarded in the same light by yourself. Your present circumstances are most creditable to you, and show that your intellect has its true and proper crown,—moral worth. May you ever be thus happy, as you deserve to be! I have sometimes thought of more prominent and brilliant situations for you; but after all, if you can be content with the love of a virtuous woman in a place where you have the chief requisites and a little of the luxuries of life, and where, exempt from the excitements and sordid bustle of a town, you can employ those contemplative powers of mind which I believe to be your highest gifts, you are probably better as you are. Wordsworth has been much laughed at for keeping so constantly in the country; but I believe he is right. There is every thing certainly in town that can make the mind active, but it is not the place for doing any thing great, and it is not the place for a pure and morally satisfactory life."

Hugh was gladly welcomed as a contributor to the *Journal*. As usual, he replies promptly to Mr. Chambers's "kind and truly friendly letter:"

"I have some legendary stories lying by me, which I wrote about a twelvemonth ago, with the intention of giving them to the public in a volume; but the *Journal* will spread them much more widely.

There is a dash of the supernatural in some of them; but I trust that will break no squares with us unless they should lack in interest; besides, I hope there is philosophy enough in them to save the writer's credit with even the most skeptical of your readers. Superstition, however, is not at all the same sort of thing in these northern districts of the kingdom that it is in those of the south. It is no mere carcass, with just enough of muscle and sinew about it for an eccentric wit to experiment upon now and then by a sort of galvanism of the imagination, but an animated body, instinct with the true life. I am old enough to have seen people who conversed with the fairies, and who have murmured that the law against witchcraft should have been suffered to fall into desuetude; and as for ghosts, why, I am not very sure but what I have seen ghosts myself. Superstition here is still living superstition, and, as a direct consequence, there is more of living interest in our stories of the supernatural and more of human nature. When a man has a place in them, it is not generic but specific man—man with an individual character. The man who figures in an English or South of Scotland legend is quite as abstract a person as the man in a fable of Æsop; with us he has as defined a personality as the 'Rip Van Winkle,' of Washington Irving himself. By the way, much of the interest of this admirable story is derived from the well-defined individuality of poor Rip."

One or two other letters or notes passed between him and Mr. Chambers, but they are of little importance. Hugh once has this remark on the nature of contentment: "The content which is merely an indolent acquiescence in one's lot is so questionable a virtue that it seems better suited to the irrational animals than to man. That content, on the other hand, which is an active enjoyment of one's lot, can not be recommended too strongly. And it is this latter virtue, if virtue it can be called, that my papers attempt to inculcate. True, it leads to no Whittington and his cat sort of result, but it does better,—it leads to happiness, a result decidedly more final than a coach and six. Mr. Chambers once suggested that he might advantageously "shift the scene" from his "dearly beloved Cromarty," and that the less he introduces of superstition the better. "I am at the same time very sure," he adds, "that whatever be the nature of your subject, you can not fail to give it that certain yet indescribable interest which so peculiarly characterizes all that comes from your pen."

The cup of Miller's happiness was full when a little daughter began to smile upon him from the arms of her mother. All gentle, helpless things he loved with a passion of tenderness, and his affection for his own little prattler was inexpressible. He observed her movements with ever fresh interest and charm. "My little girl," he wrote once, "has already learned to make more noise than all the other inmates of the house put together, and is at present deeply engaged in the study of light and color. She is still in doubt, however, whether the flame of the candle may not taste as well as it looks."

"She was," says Mrs. Miller, "a delight and wonder to Hugh above all wonders. Her little smiles and caresses sent him always away to his daily toil with a lighter heart. In the spring of 1839 I had a close nursing for several weeks. Then there was a marked amendment. One lovely evening in April I went out, for the first time that spring, to breathe the air of the hill. When I returned, I found the child in her nurse's arms, at the attic window, from which she used to greet her papa when he came up street. She had been planting a little garden, in the window-sill, of polyanthus, primrose, and other spring flowers. When she saw me, she pushed them away, with the plaintive 'Awa, awa,' she used to utter, and laid her head upon my breast. An internal fit came on. The next time she looked up it was to push my head backwards with her little hand, while a startled, inquiring, almost terrible look came into her lovely eyes. All the time she lay dying, which was three days and three nights, her father was prostrate in the dust before God in an agony of tears. Whether he performed his daily bank duties, or any part of them, I do not remember; but such a personification of David the King, at a like mournful time, it is impossible to imagine. All the strong man was bowed down. He wept, he mourned, he fasted, he prayed. He entreated God for her life. Yet when she was taken away, a calm and implicit submission to the divine will succeeded, although still his eyes were fountains of tears. Never again in the course of his life was he thus affected. He was an affectionate father, and some of his children were at times near death, but he never again lost thus the calmness and dignity, the natural equipoise, as it were, of his manhood." This was the first and the last poignant domestic sorrow Miller experienced. He cut the little head-stone for his darling, and never again put chisel to stone.

SCIENCE IN THE ASCENDANT.

During these last quiet years of his residence in Cromarty, when Miller was putting the last touches to the *curiosa felicitas* of his style, and choosing irreversibly the form in which his higher intellectual activity was to be exerted, the question came often directly or indirectly before him whether his supreme devotion should be to literature or to science. Poetry had been as good as abandoned. He did, indeed, as his wife and one or two of his most confidential friends were aware, cherish the resolution to return to verse, and had visions of bringing even his science ultimately to minister to the Muse. But for the present his critical faculty in the poetical department had outstripped his productive faculty, and he wrote almost exclusively in prose. We find, however, from his correspondence, that the legendary tales and biographical sketches to which he had so long devoted attention, had ceased to interest him as formerly, and that he contemplated a transference of his allegiance from literature to sci-

ence. Literature has been called the science of man; science may be called the literature of nature. If the hackneyed quotation from Pope as to man being mankind's noblest study has become hackneyed on account of its truth, and if Sir W. Hamilton's favorite lines about man and mind being the only great things on earth are not rhodomontade, and if Shakespeare is higher than Newton among the moderns, and Homer higher than Aristotle or Plato among the ancients, it would seem to follow that literary art, as displayed in history, poetry, the drama, and prose fiction, takes legitimate precedence of that inquiry into the sequences of the physical world, which bears specifically the name of science. But it was under the influence of no abstract considerations that Miller determined in favor of the latter. Literature, as it presented itself to his mind, did not afford scope to his abilities. The traditions, the legends, the history of his native place,—the characters of the men he had known since boyhood,—did not appear to furnish materials out of which important literary works could be constructed. The vein was worked out.

It is perhaps surprising that he did not, so far as can be discovered, think of Scottish history as a field in which to employ himself. He might have written a history of Scotland which the world would have placed among the acknowledged master-pieces in this species of composition. The view taken of Scottish history by Miller was essentially the same as that taken by Burns, by Scott, by Wilson, by Carlyle, and he was more profoundly in sympathy with the religious genius of his nation than any one of these. His strength as a stylist lay in description, and all his books afford proof of his skill in continuous narrative.

In the history of literature, again, he was fitted to excel. No such employment of his powers, however, seems to have occurred to him. Science invited him to an unbeaten path—to an assured originality—and the scene in which her wonders were to be sought had been his play-ground since infancy. That devotion to science was attaining in his mind the power of a ruling passion is attested in that chapter of the "Scenes and Legends" in which he presents himself to his readers as the "Antiquary of the World." There is a curious interest in observing how much this chapter contains of what, a few years subsequently, made Miller famous as a geologist throughout the world.

In a letter addressed to Mr. Duff, in December, 1838, we meet with the following passage, descriptive of an attack of illness, under which Hugh had recently suffered:

"During the whole of November I was toiled almost to death at the bank with our yearly balance, and I have been confined by small-pox ever since, with a face doubtless a good deal less handsome than usual, and surrounded by faces uglier than even my own. There were faces on the bed-curtains, and faces on the walls, and faces in abundance on my wife's tartan gown; and when I shut my

eyes to exclude them, I just saw them all the more clearly. I strove hard to call up more agreeable pictures. The tree-ferns and saurians of the lias, or the half-tailed fish and cocostei of the Old Red Sandstone, it would be worth while getting into a fever to see; but I called upon them as vainly as Hotspur did upon the spirits of the 'vasty deep.' I saw faces, faces, faces, and saw nothing else. The phenomena of mind as exhibited in disease have, I suspect, been studied a great deal too little. Can you tell me how a person affected by fever can be both a man and a magic-lantern at the same time, and marvel exceedingly in his capacity of spectator at what he exhibits to himself in his character of showman? I am as much a geologist as ever,—a huge breaker of stones; and I expect, when I have broken up a few hundred cart-loads more, to know something of the matter. I am fighting my way, all alone, by main strength,—the very antitype of Thor and his hammer, and find that I have not been fourteen years a mason for nothing. . . . I must set myself in right earnest, some time next summer, to draw up an account of the geology of this part of the country. I have picked up, in a desultory way, a good many facts, some of them of value enough to be preserved; and I am of opinion, besides, that the geology of Cromarty, well understood, may serve, in part, at least, as a kind of key to that of Moray, and of the various localities in which there occur fish-beds of the same kind with ours. More splendid sections are to be found nowhere. The burn of Eathie is a study in itself."

His literary essays and his legendary tales had drawn upon Miller the attention of men eminent in the world of literature; this chapter of his book constituted his introduction to circles interested in the pursuit of science. "I may mention," he says in a letter to Mr. Robert Chambers, "that a geological chapter in my little volume of 'Scenes and Legends' has attracted more notice among the learned than all the other chapters put together. Mrs. —— had a hit at me in *Tait* for introducing such a subject; I could not tell her, however, of Fellows of the Geological Society and Professors of Colleges whom my chapter has brought more than a day's journey out of their route to explore the rocks of Cromarty." The Old Red Sandstone was at this time a comparatively unknown region to geologists, and the palæontological discoveries to which Miller was feeling his way excited the keenest interest. Dr. John Malcolmson, who had recently arrived in this country from India, visited Cromarty, discussed geological problems with Hugh, and examined with him the geological sections of the neighborhood. The Cromarty geologist began to correspond with Sir Roderick, then Mr. Murchison, and with M. Agassiz. Fleming was at this time professor of natural science in King's College and University, Aberdeen, and he hastened to Cromarty to look with the only eyes he ever trusted in matters of observation, his own, into the wonders of Eathie burn and Marcus cave. It was doubtless of great service to Miller at this stage in his geo-

logical studies to be brought into converse with the author of the "Philosophy of Zoölogy," and to have his theories, just beginning to shape, overhauled by one of the acutest, most searching, most philosophically skeptical intellects of the century. His controversy with Dr. Fleming on the old Scotch coast-line, the existence of which the latter denied to the last, probably commenced at this period, and twenty years afterwards, when the eminence and authority of both were acknowledged in the Geological Society of Edinburgh, the debate remained unfinished. But in none of its stages did it do any thing else than add zest to the cordiality of their friendship. Miller knew how to value the trenchant logic, sharp analysis, and severe inductive *cross-examination* of Fleming; and to find a worthy antagonist whom he might bring under the raking fire of his argumentative batteries was one of the choicest pleasures Fleming could find in life. He was now in the prime of his faculties; and his brilliant, incissive talk, touching, often with caustic humor, on a thousand men and things, is remembered by Mrs. Miller as very pleasantly enlivening their quiet life in Cormarty. While science was more and more absorbing Mr. Miller's attention, a backward glance being now and then given to literature, he did not cease to take the same lively interest as hitherto in the affairs of his native town.

It concerns us to note that Miller is at last ready to take flight for Edinburgh. On the 23d of December he writes to Mr. Dunlop from Cromarty, in answer to a note from that gentleman telling him that all difficulties have been vanquished, and that the sooner he appears in Edinburgh the better. "I still," he says, "feel occasional shrinkings of heart when I think of the untried field on which I am so soon to enter. 'Tremble thus the brave?' asks one of Ossian's heroes when on the eve of his first battle. But I think of the past and take courage,—of the past in my country's history, with its clear, unequivocal bearing on the cause in which I am to be engaged; on the past, too, in my own experience of life. I have seen much of the goodness of the Almighty. Twenty years ago I was a loose-jointed boy, in rather delicate health, taxed above my strength as a laborer in a quarry. It is surely a much better thing to be employed as an advocate of principles which I have ever regarded as sacred, and of whose importance the more carefully I examine I am convinced the more."

He had now been for five years connected with the bank, and this sufficed to place him behind the scenes with regard to all business operations in the district, and to make known his name to its men of capital. Hugh Miller was already a public man in the north of Scotland; and, ere he departed for Edinburgh, a number of his friends and admirers entertained him at a public dinner in Cromarty, and presented him with a tea-service in plate. Seldom has a demonstration of the kind attested a warmer or more sincere feeling on the one hand, or been more honorably earned on the other. Those who

had watched Miller most closely, and who knew him best, stepped forward to declare that they loved him and considered him a credit to them.

AT THE EDITORIAL DESK, ETC.

In the last days of 1839, Hugh Miller proceeded to Edinburgh to edit the *Witness*. He stepped into the arena alone. His wife and infant daughter he left for the present at Cromarty. Taking lodgings in St. Patrick's Square, in the old part of the town, he applied himself with ardor and assiduity to his task. "In weakness and great fear," diffident of his power to maintain the conflict against "well-nigh the whole newspaper press of the kingdom," he was nevertheless "thoroughly convinced of the goodness of the cause," and willing to devote to it the whole energies of his mind. "I found myself," he was soon able to say, "in my true place." The *Witness* started with a circulation of about six hundred; but the high character of its articles at once attracted attention, and it became evident in an exceedingly brief period that an immense accession had been made to the power with which the majority in the church acted on the body of their countrymen. And from the first, the personality of Hugh Miller was felt to be too massive and original to be absorbed in the anonymity of journalism. The voice of the *Witness* was known to be his voice, and the name of Hugh Miller was mentioned with affectionate enthusiasm, as that of the people's own champion, who among the laymen of the conflict was what Chalmers was among the clergy. Hugh Miller—the people's friend, champion, hero! It was appropriate that a self-educated man should speak for the commonalty of Scotland. It suited the stubborn independence and self-helping vigor of the race. The popular imagination, besides, ready always to be moved by adventitious circumstances, found an additional charm and picturesqueness in his having been a stone-mason, one who had actually "bared a quarry," and hewn in a church-yard. But this rugged plebeian, who stood forth to fight the people's battle, was not one who required the indulgence of refined critics. No pen wielded on either side in the controversy was more classic than that of Hugh Miller.

He shared the excitement which he contributed so largely to produce. Not only was he animated by the clearest sense of duty, and profoundly convinced that the cause was that of conscience, liberty, and Scotland, but he was conscious that the fray was not without its spectators. "The series of events which terminated in the Disruption"—the words are his own—"formed a great and intensely exciting drama, and the whole empire looked on." He shared the excitement of his countrymen; but he also, it need scarcely be added, suffered from it. Never did Hugh Miller toil as during these first three months of his editorship of the *Witness*. He wrote not

merely the leading articles, but a large proportion of the remarks introductory to the reports of public meetings, paragraphs on the decease of eminent men, and so on. The paper was puplished twice a week, and Miller would often have more than one regular leader in each number. His brother combatants, his personal friends, the buzz of applause arising throughout Scotland, cheered him on. In nothing was his temperament more characteristically the temperament of a man of genius—of literary genius—than in his susceptibility to the influence of praise. It was once truly said of him that "he was like a horse which can be urged by the voice of encouragement beyond its power of living exertion." Soon also the new paper was attacked by one or other of its many rivals of the opposite side, and with all his gentleness Miller was, when roused, a terrible foe. Professor Masson has remarked that Hugh Miller never engaged in controversial battle without not merely "slaying, but battering, bruising, and beating out of shape" his antagonist. But the moment his enemy was vanquished his anger died away. A magistrate of Edinburgh once awakened his wrath. He thought that the civic dignitary had used the power of place to annoy or crush a more honest man than himself, and there was a pompousness in his public behavior, and a meanness in some of his money-making practices, carefully disguised from the public eye, which gave Miller advantage over him. An article appeared in the *Witness* which made him the laughing-stock of Edinburgh. Next day, when Miller stepped into the publishing office, some one made a remark on the severity of his article. "Ah," said Miller, in his calmest tone,—a very dangerous tone,—"I have another shot in the locker for the baillie." "Really, Mr. Miller," replied the first speaker, "I think you ought to forbear. Baillie ——— has had his head shaved." Miller left the second shot in the locker.

Few controversialists have erred less on the side of severity than Hugh Miller, none perhaps with keener contrition when he found that he had been in the wrong. He told Mrs. Miller that he found it necessary to "abstract" men before he could punish them, and that "the sight of the human countenance, if it had but a tinge of geniality, so softened and unmanned him," that he could not shake off the thought of the individual, and had no heart to attack him.

It has been said that Miller, as editor of the *Witness*, felt himself in his place. The stimulus of a strong excitement was useful in rousing his mind to full exertion, and in dispelling the meditative, pensive, almost languid mood in which, in the stillness of Cromarty, he might have indulged. His style, after he came to Edinburgh, compared with that of the "Scenes and Legends," is improved in energy and fervor. To do his best, he required to be moved; and his most powerful compositions are his earnest newspaper articles and the letter to Lord Brougham. Dr. Guthrie said with reference to the article on the siege of Acre, that he would rather have written it than taken

the fortress. Doubtless, also, Miller was at this time happy. "He drank delight of battle with his peers." Fervid emotion bathed the frame-work of his intellect in flame. The excitement brought its own reward. The additional power and keener sympathetic joy, which a great agitation produces, more than compensate for the daintier pleasures of the intellectual recluse. But, of course, in his heroic joy there is a burning which consumes the earthen vessel. While Miller rejoiced in spirit as a strong man to run a race, his body and brain gave unmistakable evidence that the pace bore hard upon him. Hour after hour he would sit writing, until the letters danced before his eyes and every nerve tingled under the strain. Heedless of exposure, and working deep into the long winter nights, he caught influenza. No matter; he would not pause; he would not lay aside the pen which he had taken up in the cause of his Church and his country. The giddiness of mere exhaustion became the semi-delirium which accompanies inflammatory affections of the lungs and pleura. Had the intense excitement of the conflict been suspended, he would probably have fallen into a state of prostration like that which overtook his father in the sea-fight, who while the guns continued to roar did the work of two men, and when they ceased fell upon the deck more feeble than a child. Miller grew haggard in the conflict, but he never flinched.

The darkest hour, however, was now past, and streaks of dawn appeared on the horizon. In April, 1840, he was joined by Mrs. Miller, who brought with her their infant daughter, Harriet. It was a dark and dreary evening when Mrs. Miller saw his figure, in gray suit and plaid, looming through the mist on Granton pier. Her presence, she found, was much needed. Miller looked ill, and his circumstances were comfortless. His sitting-room was dingy with dust and littered with papers.

So deeply had Miller felt the discomforts of his situation that, before Mrs. Miller's arrival, he had taken a small house in Sylvan Place, on the southern or country side of the Meadows.

Hugh Miller modeled his newspaper essays, as he modeled the chapters of his books, on the productions of his beloved Addison and Goldsmith, rather than on those of the "eminent hands" whose slashing leaders have made their reputation on the London press. It was his habit to fix upon his subject a few days, or even longer, before the article was to appear, and nothing pleased him better than to have Mrs. Miller as volunteer antagonist, to maintain against him, at the supper table, the thesis he proposed to controvert. Supper was his favorite meal. At breakfast he hardly tasted food, a cup of coffee and crumb of bread being the limit of his wants. After working at his desk in the early part of the day, he would walk out, make his way into the country, saunter about the hills of Braid or Arthur Seat, with his eye on the plants, and land shells, and geological sections, or explore for the thousandth time the Musselburgh shore or the Gran-

ton quarries. He never clearly admitted the canonical authority of the dinner hour. He expected something warm to be kept ready for him; but, if the day was particularly favorable, or if a storm had strewn the coast with the treasures of the deep sea, or if some new phenomenon struck him in connection with the raised beach of Leith and required interpreting and thinking out, or if he met with a brother naturalist and got into talk—the shades of evening would be falling thick before he again crossed his threshold. Even at that hour he had little appetite. It was not until his brain, obeying what his habits of night-study had made an irresistible law for him, awoke in his fervor about ten o'clock, that he showed a keen inclination for food. Porter or ale, with some kind of dried fish or preserved meat, formed his favorite supper. On these occasions he conversed with great freedom, and found it both pleasant and profitable to have his views and arguments vigorously controverted. There can be no doubt that the extraordinary success of many of his articles,—the repeated case of their being the town-talk and country-talk of the day,—was due, in a considerable degree, to his having beaten over the ground with Mrs. Miller.

Hugh Miller conducted the *Witness* for sixteen years, and he can not have written for the paper fewer than a thousand articles. "Admirable disquisitions on social and ethical questions, felicities of humor and sportive though trenchant satire, delicate illustration and racy anecdote from an inexhaustible literary erudition, and crystal jets of the purest poetry,—such things will repay the careful student of the *Witness* file, but can never be known to the general public."

It was a tragic element in Miller's lot as a newspaper editor that he had no particle of enthusiasm for the press, no confidence in the newspaper as an educating agency. He has put it on record that the mechanics he had known whose culture consisted in life-long familiarity with newspapers were uniformly shallow and frivolous. Of himself he has spoken as doomed to cast off shaving after shaving from his mind, to be caught by the winds, and, after whirling lightly for a little time, to be blown into the gulf of oblivion. Perhaps he did not enough take into account the essentially ephemeral nature of human productions, or reflect that the longest-lived book and the newspaper article of the hour are alike covered up one day.

> "The memory of the withered leaf
> In endless time is scarce more brief
> Than of the garnered autumn sheaf."

Nay, inasmuch as a powerful newspaper writer lodges his thoughts in the minds of men engaged in affairs, and has them thus woven into the web of events and the fabric of institutions, it might be argued that he least of all toils without result of his labors. Hugh Miller, at any rate, looked with fixed distrust upon journalistic writing, both as culture for a man's own mind and as a means of influencing

his fellows. He regarded science as a counteractive to the deteriorating effects of this kind of work upon his intellectual powers.

At the time when Hugh Miller undertook the editorship of the *Witness*, the sympathies of the people of Scotland had been to but a comparatively slight extent awakened and secured for the contending Church. A vague but potent impression swayed the public mind that the agitation was a mere clerical affair. "The ministers wanted power. They would like to put down patrons with one hand, and to silence with the other every luckless parson who did not vote in the Presbytery and preach in the pulpit as the Evangelical majority were pleased to dictate. Perhaps it was just as well that the Court of Session should keep these petulant little popes in their own places." No man did so much to dissipate these notions, so perilous to the movement, as Hugh Miller. The Church of Scotland, he proclaimed, was standing once more, as she had so often stood, on the side of the people, and he tore to shreds the flimsy plea that the dogs, valiantly defending the fold, had an eye only to their class interests. On the other hand, his influence was mightily exerted to prevent the mere ecclesiastical element from assuming that predominance which many alleged to be the object of the whole struggle. Hugh Miller felt, with a depth and solemnity of conviction which converted the feeling into a sentiment of duty, that the *Witness* was to be the organ of no clerical party, the sounding-board of no Church Court, but was to represent the movement in all the breadth and independence of its national characteristics.

Within the present century no day has dawned on Scotland when the heart of the nation was so profoundly agitated as on that on which the majority in the General Assembly of 1843 left St. Andrew's Church and proceeded to Canonmill's Hall.

Among those who were assembled in Canonmill's Hall to welcome the Free Church, the stalwart form and great shaggy head, and earnest, thoughtful features of Hugh Miller were particularly noticed. One can fancy how the fire would glitter in his moist eye, and the enthusiasm glow on his face, as he listened to words like these in the address of Chalmers: "We read in the Scriptures, and I believe it will be found true in the history and experience of God's people, that there is a certain light, and joyfulness, and elevation of spirit consequent upon a moral achievement such as this. There is a certain felt triumph, like that of victory over conflict, attending upon a practical vindication, which conscience has made of her own supremacy, when she has been plied by many and strong temptations to degrade or to dethrone her. Apart from Christianity altogether, there has been realized a joyfulness of heart, a proud swelling of conscious integrity, when a conquest has been effected by the higher over the inferior powers of our nature; and so, among Christians too, there is a legitimate glorifying, as when the disciples of old gloried in the midst of their tribulations, when the spirit of glory and of

God rested on them, when they were made partakers of the Divine nature and escaped the corruption that is in the world; or as when the apostle Paul rejoiced in the testimony of his conscience. But let us not forget, in the midst of this rejoicing, the deep humility that pervaded their songs of exultation; the trembling which these holy men mixed with their mirth—trembling arising from a sense of their own weakness; and then courage, inspired by the thought of that aid and strength which were to be obtained out of His fullness who formed all their boasting and all their defense."

It is worthy of mention that the name "Free Church of Scotland" appears to owe its origin to Hugh Miller. He had made use of it in articles in the *Witness* months before the Disruption; and his grand anxiety was that the Free Church should be, in all respects save that of formal alliance with the State, the old Scottish Church. Hugh Miller was a man of definite opinions, and held them tenaciously; but he was not devoid of that capacity of growth, which is, perhaps, the ultimate characteristic of great minds. Such an intellect as his could not become a fossil, however exquisitely colored and definitely traced might be the markings on it. As a man of science he kept the gates of his soul grandly open.

THE OLD RED SANDSTONE—LETTER TO A CHILD—FIRST IMPRESSIONS OF ENGLAND AND ITS PEOPLE.

Amid the stormful enthusiasm of a great popular conflict, Hugh Miller had not forgotten the serener if not more lofty devotion which had inspired him as a servant of science. "Of Bacon," he once wrote, "I never tired;" and often, probably, when the excitement and sword-clashing of polemical battle filled the air around him, would that vessel rise before the eyes of his imagination, which Bacon saw, speeding on, age after age, across calm ocean spaces in search of light, horizon after horizon opening before her, constellation after constellation kindling in her skies. And now, when he had been for the better part of a year editor of the *Witness*, he ventured to yield to the prompting of his heart, and to recur to those geological studies which had been his delight in the quiet days of Cromarty.

On the 9th of September, 1840, there appeared in the *Witness* the first of a series of articles under the title, "The Old Red Sandstone." There were seven in all, each occupying two or three columns. The last was published in the *Witness* of October 17, 1840. The moment was propitious. Hugh Miller could state in the outset that the Old Red Sandstone formation had been hitherto considered as remarkably barren in fossils; that a continental geologist, in tabulating the various formations, had appeared to omit this one altogether; and that Lyell, whose standard work on the "Elements of Geology" had been issued two years previously, had devoted but

two and a half pages to its description. He could add that he had "a hundred solid proofs," lying close to his elbow, that the fossils of the system are "remarkably numerous." Nor were they less strange than they were abundant. "The figures on a Chinese vase or an Egyptian obelisk are scarce more unlike what now exists in nature than the fossils of the lower Old Red Sandstone." They seemed to be products of "nature's apprenticeship."

The importance of the Old Red Sandstone, as part of the geological record, had begun to be surmised by naturalists; and remarks like these were fitted to awaken the curiosity of the general public. The ear of the world, therefore, was open for the word which Hugh Miller could speak. Before September had closed, his reputation as a geologist was made. On the 23d day of that month the British Association for the Advancement of Science held its annual meeting. In the Geological Section, Mr. Lyell in the chair, Miller's discoveries were brought under the attention of leading geologists. Mr. Murchison, now Sir Roderick, spoke in terms of high eulogy of his perseverance and ingenuity in the geological field, declared that he had raised himself to a position which any man might envy, pointed to the specimens forwarded by him to London, and invited M. Agassiz to describe the class to which they belonged. The distinguished Frenchman followed in a similar strain, and proposed to name one of the most remarkable specimens "Pterichthys Milleri." Dr. Buckland's enthusiasm knew no bounds. He "had never been so much astonished in his life by the powers of any man as he had been by the geological descriptions of Mr. Miller. That wonderful man described these objects with a felicity which made him ashamed of the comparative meagerness and poverty of his own descriptions in the 'Bridgewater Treatise,' which had cost him hours and days of labor. He would give his left hand to possess such powers of description as this man." It was, in Dr. Buckland's view, "another proof of the value of the meeting of the Association, that it had contributed to bring such a man into notice."

There is something fine in this spectacle of the magnates of science welcoming with glad acclaim a brother who, coming at one stride from the quarry, makes out his title to rank as one of them. Men of letters were almost equally astonished at the performance of the Cromarty stone-mason. The benefit which Miller had derived from his long discipline in literary composition was now evident. Into the description of bare and rigid organism he could throw a fascination which charmed every lover of literary form. Here was a self-educated man, who had educated himself not to mere copiousness of glittering words, but to the chastened strength, the subtle modulation, the placid-beaming clearness, of a classic. Every page spoke of ripe thought and confirmed intellectual habits.

The "Old Red Sandstone," which, in the following year, appeared in the form of a book, was the first literary work executed by Miller

in the maturity of his power. It stands at the head of a series of unique and remarkable books with which he permanently enriched English literature,—books in which the results of face to face inspection of nature, in the quarried hill-side or on the ribbed sea-shore, are interwoven with fresh, racy, sagacious judgments on men and manners; books in which observations distinguished by exquisite scientific accuracy furnish the ground-plan for landscapes over which is poured the softest, ruddiest glow of imaginative coloring. The nature of Hugh Miller's imaginative power is characteristically exhibited in this work. His imagination is bold, yet its audacity is always restrained by reference to ascertained fact. Its pictures are never vague. If, as one critic remarked, his fossil fishes "swim and gambol," they do so as the mind's eye of Hugh Miller, after severe inspection and long gaze into the past, had seen them swim and gambol in primeval seas. If the stone branch budded like a rod of Aaron on his page, and forests, breaking from their sepulchres in the rock, grew green again in the sunlight and rustled in the wind, it was not that an oriental fancy delighted in clothing phantom hills with visionary foliage, but because the science of the West had put into his hand a lamp which lighted for him the long vistas of bygone time. This species of imagination is the most valuable which a scientific man can possess, and without it no man, however accurate his observation, however just his conception of individual facts, can be great in science. True workers in science are of three kinds, in ascending order of excellence,—the accurate observer and compiler; the sound generalizer; and the seer of nature, who first observes, then generalizes, and lastly illuminates his generalizations so that they become visions. There were many geologists of his time who, having devoted themselves exclusively to science for nearly as many years as Hugh Miller lived, traversed wider fields of observation and attained a greater acquaintance with fact; but not the most distinguished of his contemporaries surpassed him in those august operations of the mind, which may be claimed indifferently for science and for poetry.

Viewed in relation to the dimensions of the field it covers, the "Old Red Sandstone" of Hugh Miller is a comprehensive account of the formation as it appears in Scotland. The journeyman mason presented to the world of science a monograph on one of the chief rock-systems of his country, and it proved to be an imperishable masterpiece. On that division of the Old Red which is exhibited at Cromarty, and to which Miller had special access, it was almost exhaustive. He added little afterwards to his discoveries in the Cromarty beds, and no other eye has been keen enough to detect in them any thing else of importance. Subsequent research has proved that what he regarded as the Lower Old Red is the middle division of the system. In relation to the Old Red Sandstones of the southern shores of the Moray Frith and of Fife, Perth, and Forfar the book

was necessarily less complete at its first appearance; but even of these it presented a distinct, and, in the main outlines, a correct account, and when Miller put his finishing touches to it in later editions, it could claim to be the standard work on the Scottish Old Red. Sir Roderick Murchison has since demonstrated that the geological position of the conglomerate of the Western Highlands is in the Silurian system. But this would not have surprised Hugh Miller, who entertained doubts upon the subject.

With every year of his life his skill and care as a geological observer increased, but the keen and exquisite discernment he had already attained may be illustrated by a fact which can be stated in his own words. "After carefully examining many specimens," he wrote in 1855, "I published a restoration of both the upper and under side of pterichthys fully fifteen years ago. The greatest of living ichthyologists, however, misled by a series of specimens much less complete than mine, differed from me in my conclusions; and what I had represented as the creature's under or abdominal side, he represented as its upper or dorsal side; while its actual upper side he regarded as belonging to another, though closely allied, genus. I had no opportunity, as he resided on the Continent at the time, of submitting to him the specimens on which I had founded; though, at once certain of his thorough candor and love of truth, and of the solidity of my data, I felt confident that, in order to alter his decision, it was but necessary that I should submit to him my evidence. Meanwhile, however, the case was regarded as settled against me; and I found at least one popular and very ingenious writer on geology, after referring to my description of the pterichthys, going on to say that, though graphic, it was not correct, and that he himself could describe it at least more truthfully, if not more vividly, than I had done. And then there followed a description identical with that by which mine had been supplanted. Five hears had passed, when one day our greatest British authority on fossil fishes, Sir Philip Egerton, was struck, when passing an hour among the ichthyic organisms of his princely collection, by the appearance presented by a central plate in the cuirass of the pterichthys. It is of a lozenge form; and, occupying exactly such a place in the nether armature of the creature as that occupied by the lozenge-shaped spot on the ace of diamonds, it comes in contact with four other plates that lie around it, and represent, so to speak, the white portions of the card. And Sir Philip now found that, instead of lying over, it lay under, the four contiguous plates; they overlapped it, instead of being overlapped by it. This, he at once said, on ascertaining the fact, can not be the *upper* side of the pterichthys. A plate so arranged would have formed no proper protection to the exposed dorsal surface of the creature's body, as a slight blow would have at once sent it in upon the interior frame-work; but a proper enough one to the under side of a heavy swimmer, that, like the flat fishes, kept close to the bot-

tom; a character which, as shown by the massive bulk of its body, and its small spread of fin, must have belonged to the pterichthys. Sir Philip followed up his observations on the central plate by a minute examination of the other parts of the creature's armature; and the survey terminated in a recognition of the earlier restoration—set aside so long before—as virtually the true one;—a recognition in which Agassiz, when made acquainted with the nature of the evidence, at once acquiesced." This is the kind of fact which proves consummate practical ability of that character which can not be derived from books.

We may here take in a letter written by Miller, about the time when the "Old Red Sandstone" was getting into circulation as a book, to a little boy whom he had known in Cromarty. It contains a few details as to his history at the time which can not be presented to the reader so pleasantly in any other way, and it adds one other illustration to the many we have already had of his gentle, playful, sympathetic manner with children.

"EDINBURGH, 5 SYLVAN PLACE, Sept. 8, 1841.

"MY DEAR ALIE MUNRO:—I will tell you how it was that I did not reply to your kind letter last spring. It was all in consequence of another letter which I received only two days after I received it, and which entirely put it out of my mind for the time. This other letter was a Cromarty letter; and it informed me that my poor mother was very, very ill, and that unless I hurried north to see her, I might never see her more. And so I did hurry away north, with the very first coach that set out, and was one day and two nights on the road. I found my mother much better than my fears had anticipated, for the disease that threatened her life had taken a favorable turn; and ere I parted from her, which was in about a week after, she was well-nigh recovered. Meanwhile however, I had forgotten your letter. Now I know, my dear Alie, you will forgive me when you take all this into your grave consideration. My journey was a very unpleasant and sad one, so sad and unpleasant that one might almost make an agreeable story out of it. Wrecks and battles, you know, make good subjects for stories; and the worse and more unpleasant the wreck or battle, just all the better is the story. So long as I was with the coach I had nothing worse than sad thoughts and very bad weather to annoy me. From Fortrose to Cromarty, however, I had to grope my way as if I had been playing all the way at blind-man's-buff. Never yet have I been out in so dark a night. I had to feel for the road with my staff, and I discovered on two or three occasions that I had got off it only by tumbling into the ditch. It was at least three hours after midnight ere I reached my journey's end.

"I saw Aunt and Uncle Ross in Cromarty, and Cousin Mora. Cousin Mora is a smart, pretty little girl. But I dare say you will

deem my news of the north somewhat old, and there is no denying that it is less new now than it was six months ago. It is not so old, however, by a great deal, as the news you gave me about the battle of Hastings; and I of late have been giving much older news to the public in a book on the Old Red Sandstone. You remind me, dear Alie, of the stones and fossils which I used to point out to you on the shore of Cromarty. I have written a whole book about them, with curious looking prints in it—the portraits of fish that lived so very long ago, that there were no men in the world at the time to give them names. But they have all got names now, stiff-looking Greek names, which only scholars can understand. One of them has been named after me, *Pterichthys Milleri*, which means *Miller's winged fish*, and I send you prints of it that you may see what a strange-looking creature it was. By the way, have you got great chalk cliffs at Hastings? There are very curious fossils found in chalk, sea-eggs, of a kind no longer found alive, spindle-shaped stones, called *Belemnites*, other stones called *Ammonites*, that resemble coiled snakes, cockle-like shells with spines on their backs, and a great many other curious things besides that were once living creatures.

"I trust you will remember me to Aunt Munro, whose kindness to me in Cromarty I very often remember, and who has since been very kind to my sister Jane. I dare say that my answering your letter, though at this late time, I have made her lose her wager. You know lose it she must, if there was no particular time specified. I am very, very busy in these days, thinking, reading, writing, beating one day, beaten the next; called a blockhead at one time without believing it, believing it at another without being called it; living, in short, a hurried, bustling, fighting sort of life. It is very seldom I can command leisure enough to write letters, and sometimes when I have the leisure I want the will. But you see I have at length written to you, and had it not been for one circumstance, of which I have already told you, I would have written you six months ago. I have a little daughter who helps me at times in putting wrong my papers, books, and fossils. She has got language enough to call a dog *bow-wow*, and a cat *mew;* and when she sees a fossil she points to it, and calls it 'papa's fish.' She had a philosophical desire long ago to ascertain whether the flame of a candle might not taste and feel as pleasantly as it looked; but she is no longer curious on this head. I sometimes sing to her, and she seems much pleased with my music—a thing no one ever was before. I am afraid, however, that her mother will spoil her just and simple taste in this matter; but know not how to prevent it. And now, my dear Alie, I have come to the close of my letter. It is not long, you see; but there is a good deal of nonsense in it for all that. I would like very much to be a little boy once more; but alas, I am a big man, and can not play myself

so much or so often as I could wish. Some of my reddish-brown hair is actually getting gray. I am, my dear boy,

"Your affectionate friend,

"HUGH MILLER."

There is perhaps no work of Miller's by which the general reader can better judge him than his "First Impressions of England and its People." The subject has the look of being hackneyed beyond all chance of effective writing; yet the book, I venture to say, is one of the most fresh and charming in the language. The materials were gathered in eight weeks of autumnal wandering through England in 1845, and the composition occupied the leisure hours of a hard-worked editor for six months. Yet how admirable is the style! With what subtle felicity does it combine the dignity of elaborate literary form with perfect ease and freedom! And how completely do we feel, as we read, that we are in converse with a cultivated mind! The treasures which Miller had been accumulating since he was six years old—the impressions, facts, reflections, fancies of life-long observation and study—flow out upon the page in stintless yet chaste abundance, absolutely without straining or parade. There is no gaudy metaphoric daubing, no wearisome drawing out of similitudes, but the right illustration, brief and happy, always comes in at the right place, and the nice, bright word of metaphor, like the honey-touch on the lip of Jonathan when he was weary, never fails.

Of Miller's power as a critic, the passage in this book recounting his visit to the birth-place of Shakespeare, as well as several others, furnish ample proof, and the sketch of the younger Littleton is managed with great adroitness and lightness of touch. . . . The Scotchman is, of course, seen peeping from beneath his plaid as he journeys through England. "To my eye," he says, "my countrymen—and I have now seen them in almost every district of Scotland—present an appearance of rugged strength which the English, though they take their place among the more robust European nations, do not exhibit." But if he dearly loves to put in a good word for Scotland, he can do justice to England. "Scotland has produced no Shakespeare; Burns and Sir Walter Scott united would fall short of the stature of the giant of Avon. Of Milton we have not even a representative. . . . Bacon is as exclusively unique as Milton, and as exclusively English; and, though the grandfather of Newton was a Scotchman, we have certainly no Scotch Sir Isaac."

Miller's acknowledgment of what he owed to the literature of England, suggested by his visit to Poet's Corner in Westminster Abbey, is beautiful and strictly autobiographic. "I had no strong emotions," he says, with signal honesty, "to exhibit when pacing along the pavement in this celebrated place, nor would I have exhibited them if I had." The reader will feel that deep and true emotion pervades the words which follow. "Here was poor Gold-

smith; he had been my companion for thirty years; I had been first introduced to him through the medium of a common-school collection, when a little boy in the humblest English class of a parish school, and I had kept up the acquaintance ever since. There, too, was Addison, whom I had known so long, and, in his true poems, his prose ones, had loved so much; and there were Gay, and Prior, and Cowley, and Thomson, and Chaucer, and Spenser, and Milton; and there, too, on a slab on the floor, with the freshness of recent interment still palpable about it, as if to indicate the race at least not *long* extinct, was the name of Thomas Campbell. I had got fairly among my patrons and benefactors. How often, shut out for months and years together from all literary converse with the living, had they been almost my only companions,—my unseen associates, who, in the rude work-shed, lightened my labors by the music of their numbers, and who, in my evening walks, that would have been so solitary save for them, expanded my intellect by the solid bulk of their thinking, and gave me eyes, by their exquisite descriptions, to look at nature! How thoroughly, too, had they served to break down in my mind at least the narrow and more illiberal partialities of country, leaving untouched, however, all that was worthy of being cherished in my attachment to poor old Scotland! I learned to deem the English poet not less my countryman than the Scot, if I but felt the true human heart beating in his bosom; and the intense prejudices which I had imbibed, when almost a child, from the fiery narratives of Blind Harry and of Barbour, melted away, like snow-wreaths from before the sun, under the genial influences of the glowing poesy of England. It is not the harp of Orpheus that will effectually tame the wild beast which lies ambushing in human nature, and is ever and anon breaking forth on the nations, in cruel, desolating war. The work of giving peace to the earth awaits those Divine harmonies which breathe from the Lyre of Inspiration, when swept by the Spirit of God. And yet the harp of Orpheus does exert an auxiliary power. It is of the nature of its songs,—so rich in the human sympathies, so charged with the thoughts, the imaginings, the hopes, the wishes, which it is the constitution of humanity to conceive and entertain,—it is of their nature to make us feel that the nations are all of one blood,—that man is our brother, and the world our country."

"Sir, you have an eye," was what English critics said when Miller's chapters, detailing his impressions, were published in the columns of the *Witness*. A Birmingham editor, ignorant as to Miller, and fancying, for what reason I know not, that he was a "dominie," quoted passages descriptive of Birmingham and its district, and said that the writer must be a very remarkable man, since he had seen a great deal which had escaped the observation of the natives, but which, on its being pointed out to them, they also could see. Mr. William Drummond, then sub-editor of the *Witness*, and an esteemed

friend of Miller's, showed him the article in the Birmingham paper, and he had a hearty laugh at it. Truth to speak, he had an eye that was worth its place in a man's head; searching, inevitable, keen, swift, sure; which gathered information at every moment and in all places, to be hoarded up in the cells of a memory which seems never to have lost an atom of the store.

It is impossible not to see that Miller's heart warmed to England every day he continued within her borders. He was surprised with the frankness, and ready hospitality, and generosity of the people. The fact clearly is, broad as was his accent and plain his garb, that he had in England, as elsewhere, an irresistible charm for every one who came near him.

SCIENCE AND RELIGION.

"Such is the state of progression in geological science that the geologist who stands still but for a very little must be content to find himself left behind." The words are Hugh Miller's,—they occur in his preface to the first edition of the "Old Red Sandstone." Their application is of course peculiarly forcible to the geologist whose activity has been arrested by death. No man can do more than his own piece of work in science, and the question on which our estimate of the merit of a scientific worker must depend, is not whether he penetrated to the limits of any one province in nature, or uttered the final and absolute truth as to any one of nature's laws and processes, but whether he did the work he professed to do faithfully, honestly, and, to the point to which he carried it, thoroughly.

As science continues to advance, the several positions taken up by Hugh Miller, in prosecuting the sublime enterprise of proving the existence and illustrating the character of God from his works, may or may not prove tenable. Without question some of them would now be abandoned by the most eminent geologists. On taking the chair as President of the Royal Physical Society of Edinburgh, in 1852, he enunciated the following proposition: "There is no truth more thoroughly ascertained than that the great Tertiary, Secondary, and Palæozoic divisions represent, in the history of the globe, periods as definitely distinct and separate from each other as the modern from the ancient history of Europe, or the events which took place previous to the Christian era from those that in the subsequent centuries which we reckon from it. All over the globe, too, in the great Palæozoic division, the Carboniferous system is found to overlie the system of the Old Red Sandstone, and that, in turn, the widely developed Silurian system." Having spoken thus without evoking one dissentient symptom in his audience, he could expect an affirmative answer to the question which he proceeded to put: "I would ask such of the gentlemen whom I now address as have studied the subject most thoroughly, whether,—at those grand lines of division between the

Palæozoic and Secondary, and again between the Secondary and Tertiary periods, at which the entire type of organic being alters, so that all on the one side of the gap belongs to one fashion, and all on the other to another and wholly different fashion,—whether they have not been as thoroughly impressed with the conviction that there existed a Creative Agent, to whom the sudden change was owing, as if they themselves had witnessed the miracle of Creation?"

Professor Huxley now declares that "for any thing that geology or palæontology are able to show to the contrary, a Devonian fauna and flora in the British Islands may have been contemporaneous with Silurian life in North America, and with a Carboniferous fauna and flora in Africa. Geographical provinces and zones may have been as distinctly marked in the Palæozoic epoch as at present, and those seemingly sudden appearances of new genera and species, which we ascribe to new creation, may be simple results of migration."

The tendency of scientific research throughout every province of nature has been to obliterate lines of demarkation, and to show, stretching beyond us into the infinitude both of time and space, immeasurable curves and undulations of unity. The definite proofs afforded by spectrum analysis of the sameness of matter throughout the solar and stellar expanses marked a stage of sublime advancement in our conception of the harmony of things; and correspondences, indubitable though mysterious, between terrestrial magnetism, the spots of the sun, and those systems of aerolites which have recently attracted so much of the attention of philosophers, suggest that the unities of nature are as intimate and as wonderful as her diversities.

Miller was in the same line of battle with his ablest scientific contemporaries. How he would have comported himself if he had lived to see the publication of Mr. Darwin's work on the "Origin of Species," to witness its reception throughout the world of science, to follow the lines of research and speculation to which it pointed the way, we need not inquire. This, however, I will venture to say: first, that he would have distinctly declared, as, indeed, he did with reference to the old theory of development, that Mr. Darwin's doctrine has no necessary affinity with atheism; secondly, that he would have subjected the facts and reasonings of Mr. Darwin and his followers to a scrutiny more searching than they have yet received; and thirdly, that, if he had found them incontrovertible, he would, without a moment's hesitation, have proclaimed his assent to them. His reverence for God's truth was infinitely deeper than his regard for his own conception of it. That truth he would accept, howsoever and whensoever it was revealed, conscious that the willful misreading of nature is a sin against Him whose ordinance nature is. Strange imagination, that the Ineffable One is less honored by reverent caution and hesitation—by childlike fingering among the letters of his name and childlike diffidence in spelling it out—than by vociferous dogmatism on the subject! Hugh Miller dared not force his con-

science to lie *to* God by bribing his intellect to lie *for* God. His writings on those high questions which belong to the border-land between science and theology have a perennial value, not because of the finality of their matter, but because of the rightness of their manner. With true reverence and sterling integrity, he discoursed of the relations between physical and moral law in this universe, and the reciprocal bearings of God's revelation of himself in matter and by matter—his works; and his revelation of himself in mind and by mind—his word.

Familiar as Miller was with the tremendous reasonings of Hume's "Dialogue's on Natural Religion," he was not one to take refuge in the amiable platitudes of the Rose Matilda school, or to wrap himself from the lightnings in garlands of flowers. He would not have shrúnk from admitting, in all that width of extension and precision of application which Mr. Darwin and his school have shown to belong to it, the law of pain throughout the world of life. Survival of the stronger, with extermination of the weaker by famine and anguish, he would, I think, have allowed to be the law of physical nature. He would, at the same time, have maintained that "a gradual progress towards perfection," though, as Mr. Huxley points out, it forms no necessary part of the Darwinian creed, is revealed in nature. He would have dwelt with Goethe on the fact that death itself is but a subtle contrivance by which more life is obtained. Above all, he would have insisted, as neither Hume, Goethe, nor Darwin have insisted, upon sin as an explanation of misery, and upon the promise of redemption and immortality through Christ, as sending a stream of celestial radiance far up into the hollow of the terrestrial night.

In his latest work, the "Testimony of the Rocks," he expounded the Age theory of Mosaic geology with admirable breadth and lucidity; and it is generally admitted that this is the sole hypothesis which can now be maintained with any show of plausibility by those who hold Christian theologians bound to furnish a scheme of reconciliation between geology and Genesis.

Hugh Miller maintained the entire independence of science. "No scientific question," he says, "was ever yet settled dogmatically, or ever will be. If the question be one in the science of numbers, it must be settled arithmetically; if in the science of geometry, it must be settled mathematically; if in the science of chemistry, it must be settled experimentally. . . . As men have yielded to astronomy the right of decision in all astronomical questions, so must they resign to geology the settlement of all geological ones." Again: "The geologist, as certainly as the theologian, has a province exclusively his own; and were the theologian ever to remember that the Scriptures could not possibly have been given to us as revelations of scientific truth, seeing that a single scientific truth they never yet revealed, and the geologist that it must be in vain to seek in science

those truths which lead to salvation, seeing that in science these truths were never yet found, there would be little danger even of difference among them, and none of collision."

THE LAST EDINBURGH PERIOD.

The life of Hugh Miller, so varied and eventful in its early period, formed no exception, in the ten years preceding its close, to that placid uniformity which proverbially characterizes the lives of literary men, and which precludes detailed description.

During those years he conducted the *Witness* with steady and ever-broadening success, speaking his weighty word on every important question as it arose, and widely accepted as a guide of opinion. . . . The words of Miss Dunbar, that the day was coming when his country's greatest would court his acquaintance, had been literally fulfilled, and there was no circle in Edinburgh or in London which would not have felt itself honored by his presence. In the communications addressed to him by men of rank or reputation, it was assumed as a matter of course that his place was among the intellectual aristocracy of his time, and that he was one of those whose acquaintance conferred distinction. Again and again did the Duke of Argyll solicit the honor of a visit from Miller, resting his hope of a favorable reply, not on his own aristocratic birth, but on community of scientific interests and pursuits. The difficulty was to overcome that feeling on the part of Miller which we found himself describing as diffidence, but which is, perhaps, insufficiently characterized by the term; a feeling which partook little of self-distrust, and still less of haughty coldness, but consisted principally in a shy and sensitive reserve, a consciousness that his mental instruments could work perfectly only in their own placid atmosphere. He was totally devoid of ambition to shine in mixed and fashionable society. On the whole, I should say that the word "shyness" most correctly describes the quality in Hugh Miller which led him inexorably though courteously to decline invitations like that of the Duke of Argyll.

He was not a man to have many intimate friends, and few indeed of those whom he knew subsequently to coming to Edinburgh did he take to his heart with that impassioned ardor of affection which marked his Cromarty friendships.

PERSONAL RECOLLECTIONS OF A LADY.

"When his family came to town, it was with no common pleasure that I recognized in Mrs. Miller a young lady who had been a class-fellow of mine. This led me frequently to her house and gave me the opportunity of seeing her husband, and my admiration of and interest in him increased every time I met him. There could be no greater or more exciting pleasure than to converse with Hugh Miller. He

did not harangue, but conversed, and raised those with whom he did so for the time to his own level. One felt amazed to hear one's own trifling remarks made the means of bringing out his stores of observation and thought; and if by good fortune one brought to his notice some to him yet unknown fact or quotation from the poets, to whose 'terrible sagacity' he loved so often to refer, it was indeed gratifying to see the look of pleased attention with which he listened. It seemed as if he could not but be thinking, and that every thing brought grist to his mill, set going some new train of thought, or confirmed some old one. Then, of course, there were all the exciting subjects of the time—a time never to be forgotten by those who lived in it, and shared the principles and emotions of those engaged in the struggle which ended in the formation of the Free Church.

"In the end of 1848 I happened, when calling on Mrs. Miller in Stuart street, to hear that her husband was giving some little lectures on geology to a few lady friends, and I was most kindly invited to join the party. We met on Saturday forenoons, and sat round a table on which he had arranged some specimens to illustrate what he was going to tell us about. These lectures were the germs of those he afterwards delivered before the Philosophical Institution, and which have been published under the title of the 'Sketch-book of Popular Geology.' Any one who reads that volume may see how pleasant as well as instructive they were. But it can not convey the interest of being taught by such a teacher, who thought no question too trivial to be answered, and explained himself by all manner of illustrations, homely or otherwise, but always comprehensible and distinct; while over every thing his imagination threw an endless charm, and his earnest faith a deeper interest. His manner to women I always thought particularly good—wholly wanting in flattery, but full of gentle deference. Our meetings frequently ended by our enjoying Mrs. Miller's hospitality and society at luncheon, when we witnessed the same gentle manner in his own family, and various little incidents which showed his strong parental love. As spring came on our lectures took place in the open air instead of in Mrs. Miller's drawing-room, and we had some charming walks to shores and quarries in the neighborhood of Portobello, and to Salisbury Crags and Arthur Seat, where the Queen's Drive had been lately opened, and afforded us many illustrations of what we had learned from him during the winter. Never was geology more pleasantly studied.

"We spent a few weeks that autumn in the neighborhood of Melrose, and, having asked him to visit us on the banks of Tweed, I had the following note from him:

"'EDINBURGH, 2 STUART STREET, 21st August, 1849.

"'Your kind note reached me as I was engaged on the last article for the *Witness* which I shall write for at least several weeks. The

completion of my book* has at length set me at liberty; on Thursday I leave by the Wick Steamer for the extreme north; and on the Saturday, to which your kind invitation refers, I shall be sauntering, if the voyage be a prosperous one, not along the soft-wooded banks of the Tweed, but along the bleak crags that overlord the Pentland Firth. *Your* river has all the beauty on its side, but the broad Pentland with its roaring eddies is by far the more magnificent *river* of the two. My book will not be fairly published until Saturday first; but on Saturday last I did myself the pleasure of forwarding copies to all my *lady pupils*, though I am not sure that your copy has got further than C—— street. You will, I suspect, find the pure geology of it rather dry; but in the concluding chapters, more especially in the last taken in connection with the chapter on the *degradation principle*, you will, I think, find some thoughts that will interest you. A man who merely refutes an error, if it be an ingenious one and suited to fill the imagination, does only half his work. The void created ought to be filled with something as novel and curious as that which has been taken away; and in the chapters to which I refer I attempt embodying a theory compensating for the development one. I had a note yesterday from Mrs. Miller. She was well when it was written, and in spirits, and just emerging from the bustle of a Free-Church-Manse marriage.'

"He seemed to feel an increase of kindness to us, his 'lady pupils,' after that pleasant season. My recollections of him at Stuart street are fragmentary.

"In the summer of 1856 there was an archæological collection exhibited in Edinburgh. In the beginning of August I went there early the last day it was open, and came upon Hugh Miller looking at the ethnographical department. He told me he had been ill, and was then on his way home after a week's recreation. I expressed surprise at this, as I thought I had noticed his hand in the *Witness* during the past month. He said I was right, but that he had written these articles during the time of the Assembly. After looking with him for a little at the stone and bronze weapons, I went further to look at some portraits of Mary Stuart, and at a print to which he directed my attention—the print which was the subject of conversation when the boy Walter Scott met Robert Burns. As I returned I found Hugh Miller standing by Robert Bruce's sword, which had been placed in an upright position in the center of the gallery. He measured it, and then, turning to me, recited from the 'Lord of the Isles' the lines referring to it. Lord Elgin had sent the sword, and were speaking of his being of the same family as the king, when Hugh Miller told the story of the old Scotch lady of the name, who, on being asked if she was of King Robert Bruce's family, answered that the king was of *her* family.

"M. W."

* Footprints of the Creator

At Cromarty and Linlithgow, Miller, as we saw, was an indefatigable and voluminous correspondent. In Edinburgh, penning two or three leading articles per week, and with a book generally on hand, he required no further vent for his literary productiveness, and wrote no such letters as those which it formally had been his delight to pour forth. He told his friends that they must consider the *Witness* a bi-weekly letter from him, and confined his epistolary performances to notes of reply to invitations, brief answers to geological querists, and the like. In this rapid fashion he corresponded—if correspondence it can be called—with a very large proportion of the most eminent scientific men of his time. Professors Owen, Agassiz, Sedgwick, Sir Charles Lyell, Sir David Brewster, Mr. Mantell, occur to me at the moment as among those who compared notes with him as a scientific peer and fellow-worker.

A few extracts may be taken from the letters sent to Mrs. Miller during the English tour; but as he made large use of those letters in preparing the "First Impressions," we must glean sparingly:

"OLNEY, 9th September, 1845.

"Here I am in a quiet old inn, kept by a quiet old man who remembers 'Squire Cowper and Mrs. Unwin; and in the early part of the day I walked the walk described by the 'Squire in the 'Task,' with an old woman of seventy-one for my guide, for whose schooling Mrs. Unwin had paid. She knew the Lady Hesketh, too, and, when a little thing, used to get coppers from her. A kindly lady was the Lady Hesketh; there are no such ladies nowadays—that is, at Weston Underwood, I suppose. She used to put coppers into her little silk bag every time she went out, in order to make the children whom she met happy. She and Mrs. Unwin, too, were remarkably good to the poor. I walked with the old woman, much entertained with her gossip, through the stately colonnade of limes whose 'obsolete prolixity of shade' the poet has celebrated, and which is in sober truth a very notable thing, on to the 'alcove,' and from thence to the 'rustic bridge,' and then on through the field with the chasm in the center of it, into which the sheep of the fable proposed throwing themselves, to 'Yardley Oak.' Then returning by another road, I passed by the 'peasant's nest,' and after making the old woman happy with half a crown, parted from her and struck down to the Ouse, a sluggish, sullen stream fringed with reeds and rushes, that winds through flat, dank meadows, on which a rich country looks down on either side. I saw the broad leaves of the water-lilies bobbing up and down in the current, but the lilies themselves were gone. By the way, my old guide knew not only the 'squire and the two ladies, Mrs. Unwin and the Lady Hesketh, but also the little dog Beau, and a pretty little dog he was, with a good deal of red about him.

"Directly opposite Cowper's house in Weston Underwood I picked

up a fossil pecten and terebratula, and bethought me of his denunciations of the geologists,—who, to be sure, in his days were a sad infidel pack. . . . Immediately behind the garden is the snug parsonage-house — the home in succession of John Newton and Thomas Scott—and the parish church in which they both preached, a fine, solid structure, with a tall, handsome spire, closes the vista in this direction.

"So much for Olney. The greater part of yesterday I spent in Stratford-on-Avon, where I saw both the birthplace and grave of 'William Shakespeare, Gentleman,'—have you ever heard of such a person? The birthplace, a low-browed room, under the beams of which one can barely walk with one's hat on, is not half a mile removed from the burial-place. The humbly born boy was a purpose-like fellow, and returned to his native town a gentleman, and to get himself a grave among its magnates in the chancel of the church. By the way, in utter defiance of fine taste and fine art, I pronounce the humble stone bust, his monument, incomparably superior to all the idealized likenesses of him, whether done on canvas or on marble, that men of genius have yet produced. The men of genius make him a wonderfully pretty fellow, with poetry oozing out of every feature; but their Shakespeare would never have been 'William Shakespeare, *Gentleman;*' neither, in the times of Elizabeth and James, when money was of such value, would he have returned to his native village a man of five hundred a year. The Shakespeare of the stone bust is the true Shakespeare; the head, a powerful mass of brain, would require all Chalmers' hat; the forehead is as broad, more erect, and of much more general capacity; and the whole countenance is that of a shrewd, sagacious man, who could, of course, be poetical when he willed it—rather more so than any body else—but who mingled wondrous little poetry in his every-day business. The man whom the stone bust represents could have been Chancellor of the Exchequer, and in opening the budget his speech would embody many of the figures of Cocker, judiciously arranged, but not one poetical figure.

"You speak, dearest, of temperament, and the difficulty of bearing up against it by any mere effort of the will when it is adverse to small, but not unimportant, every-day duties. I know somewhat of that difficulty from experience in myself; willing may do much, but it will not change nature, or convert uphill work into downhill. But I trust we shall both get on, bearing and forbearing, with a solid stratum of affection at bottom. I have been conscious, since my late attack, of an irritability of temper, which is, I hope, not natural to me, and which, when better health comes, will, I trust, disappear. I keep it down so that it gives no external sign; since I entered England it has found no expression whatever; but I am very sensible of it, especially after passing a rather sleepless night. To-day I am in a very genial humor, the entire secret of which is in the excellence

of last night's rest, induced, I think, by the fatigue of the previous day. I mention the thing merely in corroboration of your remark—we can not be independent of the animal part of us. I am a good boy to-day because I slept well last night, but I was not so good a boy a week since, for my nerves were out of order, and my sleep had been bad.

"By the way, you said nothing in your last about Harriet. Tell her that I have put a kiss in the heart of this round O, which she must try to bring out of it. This is a fine country for nuts, and I must get some for her Halloween, brought to Archibald Place. I did not get to the Liverpool meeting. . . . From the tone of the dissenting papers here regarding it, I have lost all hope of its producing aught except bad speeches. Voluntaryism has eaten the very pith out of Dissent; like a goodly tree eaten by white ants, it will yield to the first shock of the tempest."

This note to his mother-in-law, on occasion of the birth of his son Hugh, is worth printing on account of the autobiographic touch respecting his own birth, and the characteristically mournful reflection which follows.

"2 STUART ST., EDINBURGH,
"4 o'clock, Thursday Afternoon.

"The doctor has just been with us, and he is well pleased with the appearance of both mother and child. Baby, in his introduction into the world, had a sore struggle for life; and in pugilist's phrase, but with a deeper meaning than theirs was about five minutes 'deaf to time.' Accidents can scarce be hereditary; but my mother has told me that, when making my debut, I refused to breathe for a still longer period. Were all the future known to the little *entrants*, such refusals would, I dare say, be more common than they are, and more doggedly persisted in."

Miller was particularly gratified by terms in which the gift of the "Footprints" was acknowledged by Professor Owen, and quotes, in the following letter, to a lady, the passage in which the work was mentioned by that eminent philosopher:

"Unpopular as I suppose my little book was to prove, the first thousand has gone off bravely, and I am passing a second through the press. Some of the letters regarding it are of a very gratifying character. One, in special, from the first comparative anatomist in the world (Richard Owen), is singularly warm hearted and cheering; and, as you will not set it down to the score of vulgar vanity, I must just give you an extract, partly in order to show you, *as one of my pupils*, that I was not mistaken in supposing that the least popular portions of my book would be exactly those to which a certain class of students would attach most interest: 'I have just received and, setting all other things aside, devoured your Asterolepis of Stromness. I find it not so hard and indigestible as it may prove to the

Vestigesians. I have been instructed and delighted by it. I have also derived a heartfelt encouragement from it. It is almost the first contemporary work in which I have found some favorite ideas of my own weighed out and pronounced upon. This cheers one up after the despondency that will, in spite of reason, creep over one through the blank silence in which one's favorite works are received by those in whose especial behoof they have been cogitated and printed. I allude to the host of estimable anatomists, anthropotomists, and Zoologists that we live and move against in our scientific cotteries of London.' This, you will agree with me, is worth whole volumes of ignorant criticism; a newspaper reviewer, very favorable in the main, speaks of my 'rather tedious introduction;' it was, however, not for newspaper reviewers, but for men such as Professor Owen that that introduction was written; and the professor, you see, does not deem it tedious."

In the autumn of 1850, the annual meeting of the British Association for the Advancement of Science was held in Edinburgh. In the beginning of June the following note from Sir Roderick Murchison reached Miller:

"16 BELGRAVE SQUARE, May 31, 1850.

"At a meeting of the Council of the British Association held yesterday I was named President of Section C (or Geology and Geography), with yourself and James Nicol as secretaries for our special science, and with A. Keith Johnstone for geography.

"As I moved that you be placed in this office, and as my motion passed unanimously (and indeed with acclamation in a full meeting, Professor Kelland from Edinburgh being present), I trust you will not allow any thing to prevent your accepting it. I honestly confess that no honor could be more gratifying to me than to occupy the geological chair in my native country; and if I know that the author of the 'Old Red Sandstone' will be one of the secretaries, I shall be still more proud, for I consider that *we* come from the same nook of land, the Black Isle and Cromarty being inseparable."

He replied as follows:

"Accept my best thanks for the great and unexpected honor you have done me in proposing me as one of the secretaries for the Geological Section of the British Association at its coming meeting. I am afraid my qualifications for the office are not of the highest kind; my newspaper, too will engage much of my time, and my health for the last few years has not been very strong; but I feel that I could scarce decline the appointment without, at least, appearing to fail in respect to the Council of the Association and in gratitude to you. I shall, therefore, do my best to fulfill its duties, trusting that the good-nature of the Association may excuse my shortcomings, and the activity and business habits of my coadjutor, Professor Nicol, more than compensate for them. I have, I think, some curious things to set before the

English Geologists illustrative of the first ages of ganoidal existence—fossils either without duplicate, or in a better state of keeping than elsewhere—which may serve to show them that at least one of the pages of the geological record (that which you were the first to open) is more fully and clearly written in the rocks of our native country than in perhaps those of any other. My set of the remains of the *Asterolepis* is, in particular, very curious and, I believe, unique; and, though I do not know that I can say much regarding them in addition to what I have already said in my little work 'The Footprints,' it may be something to verify and illustrate by fossils so rare and little known what in the work I had to illustrate by but a set of greatly reduced wood-cuts.

Hugh Miller was a tenderly affectionate parent, and never did he display the least severity to his children until he became ill the last year of his life. One or two specimens may be given of the letters which, when absent on his geological tours, he used to address to them:

TO HIS SON WILLIAM.*

CROMARTY, August 24th, 1851.

"On the morning of Saturday I rose at five o'clock, and set out on foot (from Assynt) on my way to the Low Country, with the purpose of examining the marble quarries of Ledbey ere the mail-gig, with which I was to travel, should come up. The morning was lovely beyond description. While all was in deep shade in the valleys, the tops of the tall mountains gleamed like fire to the rising sun; and Loch Assynt, that seemed as black and as polished as a jet brooch, and here and there its patches of reflected flame. I passed one other very pretty loch, not of great extent, but speckled with green islands waving with birch and hazel, and abounding in fish, that as I went by were dimpling it with a thousand rings, and leaping for a few inches into the air. I here met an English manufacturer in kelt and hose, surrounded by half-a-dozen Highland gillies, all tightly breeched. I found the marble, white and gray, rising amid the heath and long grass, like old snow on a mountain-top in midsummer, and detached several specimens. But I was fairly beaten off from examining the deposit as thoroughly as I could have wished, by armies of midges, that rose in clouds about my face every time I bent down to strike a blow, and made it feel as if it had been bathed in boiling water. There is perhaps no place in the world in which these little creatures are more troublesome than in the western parts of Sutherland. I traveled on by the gig to Lairg, which I reached about two o'clock, and took in one meal breakfast and dinner. When I was a boy a few years older than you I used to

* Now Lieutenant in the 37th Grenadiers in India.

spend some of my holidays in the neighborhood of this place; and, being desirous to revisit the localities with which I was so well acquainted of old, I determined on passing a day or two in the Lairg Inn. But I was told by the landlord that his house was quite full, and that he could not accommodate me. 'I have a plaid of my own; could you not give me the use of a sofa?' I asked. The landlord looked at me, and then beckoned me into a corner. 'Mr. Miller, you are a man of sense,' he said; 'all my bedrooms have been engaged for months by sporting gentlemen from the south, and my public room is occupied chiefly by their servants. The engaged rooms I can not give you; and the servants are no company for you. Even the very bed I can give you is in a double-bedded room, occupied in part by Lord Grosvenor's valet. I state to you the real case, while you are yet in time to ride away by the mail to Golspie.' I thanked the landlord, who is really a very decent man, and determined that, as I have prosecuted my researches during the last thirty years under great difficulties, the difficulty of the servants in general, and of the valet in particular, should not turn me back now. And so I took my share of the double-bedded room. Papa thinks that his status, such as it is, is that of the man of science, and that it is so dependent on what he achieves for himself, that it could not be improved by sleeping in the same bed with a lord, or yet depressed by going to bed in the same room with a lord's valet. I had calculated on attending church at Lairg; the Free Church is only a few hundred yards from the inn, and though a rapid river lies between, the late Mrs. Mackay, of Rockfield, had given money to make a suspension bridge over it, just in order that the people on the Lairg side might get easily to church. But on this Sabbath there was no preaching, the minister being from home; and though the *men* of the district officiated, their addresses were all in Gaelic. The father and grandfather of Mrs. Mackay's husband were, in succession, ministers in this parish, and there is an interesting monument in the church-yard to their memory, and to that of two of the sons of the *son*, the one a captain in the army, who 'fell,' says the epitaph, 'in the moment of victory at the muzzle of the enemies' cannon, at the memorable battle of Assaye, fought between General Wellesley and the Mahrattas;' the other a commander in the navy, of whom it is said that 'his narratives of the shipwreck of the 'Juno,' and of his exertions in the Red Sea, where, under God, he saved part of the 86th regiment, will commemorate his talents, fortitude, and humanity.' Now, regarding the narrative of the shipwreck of the 'Juno,' something curious can be told, in which you may take an interest when you grow older. There is a very famous description of a shipwreck in Byron's poem's, into which there are introduced many circumstances new to poetry. And it was in this narrative that Byron found almost all of them. Indeed, his description may be in great part regarded as but a metrical rendering of Commander Mackay's narrative."

TO THE SAME.

ASSYNT, August 20th, 1852.

"Harriet, you, and Bessie are the public for which I write; while poor little Hugh, who is, I suspect, not intelligent enough to feel any interest in papa's adventures, must be regarded as that ignorant, but not uncared-for, portion of the community which education has not yet reached. I broke off late on Saturday night in the little inn of Huna; the Sabbath morning rose clear and beautiful; I never saw the Orkney Islands look *so near* from the main land; their little fields, at the distance of many miles, gleamed yellow in the sun; and the tall Old Red Sandstone cliffs of Hoy—cliffs nearly a thousand feet in height—were sharply relieved against the sky, and bore a blood-hued flush of deep red; while the Pentland Frith, roughened by a light breeze, was intensely blue. I walked on after breakfast to the Free Church, and heard from Mr. Macgregor two solid, doctrinal discourses. The congregation, however, was very thin; but I ought not to judge of it, I am told, by present appearances, as many of the men connected with it are at the herring-fishery. Still, however, it is only half a congregation at best, the other half congregation of the parish being in the Established Church. Papa and his friends could not help being Free Churchmen, as you will learn when you get older; we could not avoid the Disruption; but papa does sometimes regret that the Disruption should in so many parishes have, as it were, made two bites of a cherry; that is, broken up into two congregations a moiety of people that would have made one good one, but no more. After sermon, and after dinner, I walked on in the cool of the evening towards Wick, which I reached about nine o'clock. The little inn at Huna is far, far from any butcher's shop; and so a poor hen had to die every day papa was there, in order that papa should dine. There is an album kept at it, as I told Harriet two years ago, in which all visitors write their names, and whatever else may come into their heads; and so it contains, as you may think, a great deal of nonsense, with here and there a witty thought, and here and there a just sentiment. Papa wrote some not very good rhymes in it about two years ago, and some not very good rhymes on the present occasion; though in the space between the two visits he wrote only solid prose. But those who pass evenings in the inn at Huna have usually not much to do; and so many of them, in imitation of those who have rhymed in the album before them, set themselves to break the queen's English into very clumsy lines, with not much sense in them, that chime at their terminations. The following formed papa's last effort:

"'Right curious volume! two long years have passed
Since I glanced o'er thy chequered pages last;

And leaves then blank in thee are filled, rare book,
E'en in a way on which 'tis sad to look;
So scant the wit, the wisdom seldom seen,
While dreary wastes of folly spread between.
Yes, sad, full sad, for, curious book, I see
Too true a picture of my life in thee;
Folly in both prevails, in both how few
The points to instruct the heart, or glad the view;
In both the past admits of no recall,
E'en as the thing was done we stand or fall;
The ill expressed we can not well suppress,
Nor can we make the by-past nonsense less.
Yet must I hold, poor, curious book! that thine
Is e'en by much a harder fate than mine:
For thee no new editions wait,—no *Mind*
Shall add the wisdom that it does not find;
Raise into worth the groveling and the low,
And mental force and moral weight bestow;
E'en faulty as thou art, thou still must be,
A nobler destiny waits, I trust, on me;
The Great Corrector shall revise my past,
And in a fairer mold its lines re-cast;
For folly, wisdom; strength for weakness lend,
And all my blots erase, and all my faults amend.'

"So much for papa's rhymes. There are some people, who rhyme not much better than papa, who believe themselves to be poets; but that is a mistake, and it usually does those who entertain it some harm. They rhyme, and rhyme, and rhyme, and deem themselves neglected because the world does not buy and praise their rhymes. But for rhymes such as theirs and papa's the world has no use whatever; the article bears no money value in the market; though to devote twenty minutes or so, in two years, to the manufacture of it, as papa does, is productive of no manner of harm.

During the year 1853 a large proportion of the chapters of Hugh Miller's autobiographical work appeared in the *Witness*. In the beginning of 1854 the book was published under the now well-known title, "My Schools and School-masters." Its success was immediate and decisive. Literary men were glad to meet Miller in a field from which controversy of every kind was excluded, and to mark the skill with which he wielded the instruments of pure literary art. Their disposition was to pronounce it his most valuable work. Readers will with interest peruse the two following letters on the subject:

FROM MR. ROBERT CHAMBERS.

"1 DOUNE TERRACE, March 1, 1854.

"I can not think of confining my thanks for your volume to the few hurried words I had an opportunity of saying last week. Not

that I am excitedly grateful for the kind reference you have made to myself, but because I have read your first three hundred and fifty pages with a heart full of sympathy for your early hardships and efforts, and an *intense* admiration of the observant and intelligent mind which I see working in that village boy on the shore of the Cromarty Frith. I can not refrain from congratulating you on the publication of this book, which I consider as yet your best, and the one that will prove most enduringly useful, interesting, and popular,—simply because yourself have been the best phenomenon you have ever had to describe. I can not refrain from congratulating you on the triumphs you have achieved over the great difficulties of your early position, which now appear to me far beyond any thing I had previously imagined. And, believe me, I am most cordially sincere when I offer you my best wishes for the remainder of a career, the early part of which has been so creditable to you. Be assured that Scotland has few dearer living names at present than Hugh Miller, and must henceforth feel the deepest interest and concern in every thing you do.

"Your autobiography has set me a thinking of my own youthful days, which were like yours in point of hardship and humiliation, though different in many important circumstances. My being of the same age with you, to exactly a quarter of a year, brings the idea of a certain parity more forcibly upon me. The differences are as curious to me as the resemblances. Notwithstanding your wonderful success as a writer, I think my literary tendency must have been a deeper and more absorbing peculiarity than yours, seeing that I took to Latin and to books both keenly and exclusively, while you broke down in your classical course, and had fully as great a passion for rough sport and enterprise as for reading—that being, again, a passion of which I never had one particle. This has, however, resulted in making you, what I never was inclined to be, a close observer of external nature—an immense advantage in your case. Still I think I could present against your hardy field observations by frith and fell, and cave and cliff, some striking analogies in finding out and devouring of books, making my way, for instance, through a whole chestful of the 'Encyclopædia Britannica,' which I found in a lumber garret! I must also say, that an unfortunate tenderness of feet, scarcely yet got over, had much to do in making me mainly a fireside student. As to domestic connections and conditions, mine, being of the middle classes, were superior to yours for the first twelve years. After that, my father being unfortunate in business, we were reduced to poverty, and came down to even humbler things than you experienced. I passed through some years of the direst hardship, not the least evil being a state of feeling quite unnatural in youth, a stern and burning defiance of a social world in which we were harshly and coldly treated by former friends, differing only in external respects from ourselves. In your life there is one crisis where I think

your experiences must have been somewhat like mine; it is the brief period at Inverness. Some of your expressions there bring all my own early feelings again to life. A disparity between the internal consciousness of powers and accomplishments and the external ostensible aspect led in me to the very same wrong methods of setting myself forward as in you. There, of course I meet you in warm sympathy. I have sometimes thought of describing my bitter, painful youth to the world, as something in which it might read a lesson; but the retrospect is still too distressing.* I screen it from the mental eye. The one grand fact it has impressed is the very small amount of brotherly assistance there is for the unfortunate in this world. I remember hearing the widow of Mr. —— tell how she had never been asked by any relation of either herself or her husband to accept of a five-pound note, though many of them were very well off. The rule is to leave these stricken deer to weep themselves away unsuccored. I have the same experience to relate. Till I proved that I could help myself no friend came to me. Uncles, cousins, etc., in good positions in life—some of them stoops of kirks, by-the-by—not one offered, or seemed inclined to give, the smallest assistance. The consequent defying, self-relying spirit, in which, at sixteen, I set out as a bookseller with only my own small collection of books as a stock—not worth more than two pounds, I believe—led to my being quickly independent of all aid; but it has not been all a gain, for I am now sensible that my spirit of self-reliance too often manifested itself in an unsocial, unamiable light, while my recollections of 'honest poverty' may have made me too eager to attain and secure worldly prosperity. Had I possessed uncles such as yours I might have been much the better of it through life.

"Pray accept with lenity these hurried and imperfect remarks, into which I have been led by a sort of sympathetic spirit, almost against my own sense of propriety."

FROM MR. THOMAS CARLYLE.

"5 Cheyne Row, Chelsea, London, 9th March, 1854.

"I am surely much your debtor for that fine book you sent me last week, which was welcome in two ways, the extrinsic first, and now the intrinsic; for I have now read it to the end (not a common thing at all in such cases), and found it right pleasant company for the evenings I stole in behalf of it! Truly I am very glad to condense the bright but indistinct rumor labeled to me by your name, for years past, into the ruddy-visaged, strong-boned, glowing figure of a man which I have got—and bid good speed to with all my heart!

"You have, as you undertook to do, painted many things to us;

*See the "Autobiographic Reminiscences of Robert and Wm. Chambers," published in this volume.

scenes of life, scenes of nature, which rarely come upon the canvas; and I will add, such *draughtsmen*, too, are extremely uncommon, in that and in other walks of painting. There is a right genial fire in the book, every-where nobly tempered down into peaceful radical heat, which is very beautiful to see. Luminous, memorable; all wholesome, strong, fresh and breezy, like the 'Old Red Sandstone Mountains' in a sunny summer day; it is really a long while since I have read a book worthy of so much recognition from me, or likely to be so interesting to sound-hearted men of every degree. I might have my objections and exceptions here and there (not to the matter, I think, however, if sometimes to the form); but this is really the summary of my judgment on the business. And so, once more, I return you many thanks, as for a gift that was very kind, and has been very pleasant to me."

The month before this Miller lectured in Exeter Hall, London, to the Young Men's Christian Association. The following notes of his visit to the metropolis occur in a letter to Mrs. Miller of February 9th:

"I was safely delivered of my address between the hours of eight and ten on Tuesday evening (skillfully assisted by Mr. Allon), and am now as well as could be expected. Mr. Allon is a clergyman, but an independent one.

"I had a noble audience of, as the *Morning Advertiser* says, five thousand persons, and I carried them with me throughout. During the earlier stages of the address they were attentive, which I hardly expected, as my preliminary matter was somewhat scientific and dry, and throughout the concluding part rapturous in their applause. On the whole, a more successful address was never delivered in the great hall. Allon's pronunciation was beautiful, and showed me better than a hundred lessons the faults of my own. He read, too, with great vigor, and gave to my style the proper classical effect."

The story of Hugh Miller's life has been given to the readers of this volume in his own language and in that of his friends; arranged as to sequence in the order adopted by his excellent biographer Mr. Peter Bayne, who is also his distinguished successor as editor of the *Witness*. The narrative, although essentially abridged from the thousand pages covered by Mr. Bayne in his very valuable work,* is yet given with fullness, especially during the period of Hugh Miller's youth and earlier struggles "up the heights" to the point where he finally became the observed of all observers. We think the sketch will have been found not a *skeleton* merely, but a well-rounded narrative, conveying, in the purest classical English, many of the best thoughts of a great and independent thinker, particularly during the period prior to his leaving the country for his more public career as editor in the city of Edinburgh.

* The Life and Letters of Hugh Miller, by Peter Bayne, M. A.

We have just noted Miller's remarks on the lecture which he gave before the Young Men's Christian Association in London, and have observed that he felt keenly his inability to *read* before an English audience what he could *write* in so masterly a style, but he was only the more ready to appreciate Mr. Allon's ability to supplement his labor, by adding, a clear and distinct *English* pronunciation, which Miller's native heath could not train him to render. It can not be doubted that the narrative we print will *read well* if it be only *well read.* We now present the very valuable views of our great subject as given in Dr. McCosh's Recollections of Hugh Miller:

"I have been requested to write out some recollections of my old friend, and I have a melancholy pleasure in complying.

"The name of Hugh Miller first became known to me, as it did to Scotchmen generally, by his 'Letter from One of the Scotch People' to Lord Brougham. Multitudes rejoiced when they heard soon after that the friends of Non-Intrusion and Spiritual Independence had made arrangements for his conducting a newspaper in Edinburgh. They felt that from that day the cause received an accession of strength. We were particularly pleased to find that, from the first, and to the end, he maintained an attitude of independence, not only of politicians, but of Church leaders. The movement had hitherto assumed too much of an *ecclesiastical* aspect. No doubt it had in it all along the popular element of Non-Intrusion; but the Spiritual Independence side was the one mainly dwelt on in Church courts; the Scottish people did not always understand what was meant by overtures to the General Assembly about independence of the civil courts; and not a few entertained the suspicion that the ministers were seeking for power to themselves which would set them above the law of the land, in the settlement of ministers. Certain it is that the cry of the clergy did not always carry with it the popular sympathy; and there were times and places in which public meetings called to support it were put down by mob opposition. It was most important that at that crisis the grand old cause of Scotland should have one of the people to support it, and a shout of joy burst out all over Scotland when Hugh Miller came forth as the champion of popular rights. The newspaper was published twice a week; and Wednesdays and Saturdays, the publishing days, were looked forward to by many, because they brought the *Witness.* The paper was read, not so much for its news, nor even its reports of Church courts, as for its leading articles. Many a retired country minister, living, perhaps, in the midst of a body of farmers, who had no appreciation of the questions at issue, had his spirit aroused as by a trumpet clang by the powerful appeal made to him, and he paused in the midst of writing his sermon on the Saturday to read the leading article. The day laborer or weaver could not afford to take the paper, but he was grateful when some one, minister or elder, lent it to him. The literary men in our universities had, as a whole, a deep

suspicion of the movement, and did not like to be thought readers of the stone-mason's paper, but were glad when they could get furtive glances at it, and were obliged to acknowledge its literary superiority. From a very early date Hugh Miller's name became a household one in the best families of Scotland. The common people never called him Mr. Miller; they would no more have done this than they would have called Robert Burns by the name of Mr. Burns; they identified themselves with him and identified him with themselves by calling him *Hugh Miller*. They felt as if he still carried his chisel and his hammer, and as if he were now forming and fashioning, by firm and manly stroke, a nobler edifice than ever his mason's tools had constructed. I was in circumstances to know the feeling of Scotland at the time, and I am convinced that the old national cause, which was defeated in 1843, but which gained the victory in its defeat—as, with reverence be it spoken, the cause of Christ did when he was crucified—was indebted, among the great mass of the people, to Hugh Miller as much as to any other man.

"I read his paper from the first; but shy as I have ever been to court the great men whom I admired, I was not personally acquainted with him till 1850. That year I published my first work, 'The Method of Divine Government.' I had made up my mind to meet failure as well as success; and I believe that if the work had met only with popular neglect I would have clung to it the more resolutely, as the father will dote the more lovingly on that daughter in whom the silly beaux see no merits. I had fortified myself against both praise and blame; but there were two men in Edinburgh about whose good opinion I felt somewhat sensitive: these were Sir William Hamilton and Hugh Miller. I asked my publishers to send a copy of my work to each. Meanwhile the public scarcely knew what to make of my big, and, as some deemed, pretentious book. The *Athenæum* noticed me contemptuously, evidently without reading me; it praised some of my works afterwards, when I had earned a reputation. My very friends shook their heads, and were expecting a failure. Now it was at this time, when readers were hesitating which side to take, that the two Edingurgh giants spoke out, and spoke out courageously—not uttering ambiguous oracles, which would make them right whatever the way in which the public might ultimately decide. I was not known at the time beyond a limited district in the north of Forfarshire and the south of Kincardineshire; I believe neither of the eminent men referred to had ever heard of me before; and this led them to exaggerate my merits. I feel, in this distant land, a deep gratitude to the many kind Scottish friends who helped to bring my book into notice; but I feel most to the great Scottish metaphysician; and with him, and above him, to the man who spoke first, to Hugh Miller.

"I felt now as if I ought to seek the acquaintanceship of Hugh Miller. This was brought about by our mutual friend, the Rev. Dr.

Guthrie, who invited him to meet me at dinner. And this may be the fittest place for describing his outward appearance as it first came under my notice. In dress he neither affected a slovenly carelessness nor a prim gentility. It was very much the dress worn on Sundays by the better class of tradesmen and upland farmers. It must be confessed that at first sight he had somewhat of a shaggy appearance, relieved, however, by a look of high independence and an air of indomitable energy and perseverance. He was a *man* of the highest type throughout; but if he had a counterpart in any of the lower animals it was in the noblest of the dog tribe, such as Landseer loves to paint, as in his Dignity as contrasted with Impudence. Yet he was withal wonderfully shy, and unwilling to seem to be seeking the favor of any man. A little incident may show what I mean. Dr. Guthrie and I had been walking together on the day on which he had asked him to meet me at dinner; and when we were at some distance we saw him approaching the door. 'Let us run,' says Dr. Guthrie; 'for if he goes to my house and finds me not in he will set off;' and we did run to catch him. I remember another circumstance illustrating the same point. I was talking to him of the *literateurs* of Edinburgh, great and small. He did not seem to have much intimacy with them. We talked of Lord Jeffrey, of whom he spoke kindly and respectfully. 'He expressed,' he said, 'a wish to make my acquaintance when I came to Edinburgh; but as he did not call on me, I did not see my way to call on him, and we have not had much intercourse.' I happened to be in his house one forenoon when he was expecting a call from Sir Roderick Murchison in the afternoon. He was too proud a man to make any boastings about it; but it was evident that he was highly gratified by the proffered visit; and he had his splendid museum in the highest possible order to show it to the distinguished geologist. He had a heart to cherish a sense of favors when bestowed without any condescension, or endeavor to interfere with his independence, but certainly with no stomach to seek favors even from those who would have been most willing to grant them.

"We met at dinner on the day I have referred to. Besides Dr. Guthrie, Mr. Miller and myself, there were only one or two others present. Dr. Guthrie restrained his usual flow of mingled manly sense, humor, and pathos, to allow his friend to speak freely; and he had soon to go out to a congregational meeting. So I had the great man to myself for the evening, and he under no restraint. I have observed that in large, promiscuous companies he was apt to feel awkward and restrained, and to retire into himself, and sit silent. But when there were only a few persons present, and these of congenial tastes, his conversation was of the most brilliant description. You saw the thoughts laboring in his brain as distinctly as you see the machinery in a clock when the clock-work is in a glass case. That evening we talked of subjects that were familiar to him, and which

I was at that time studying, such as the typical forms which Professor Owen was detecting in the vertebrate skeleton, and the possibility of reconciling them with the doctrine of final cause and the mutual adaptation of parts. He was not sure about some points, and my delight was to set his mind a working. He afterwards brought out his matured views in a very brilliant article which he wrote, reviewing a paper of mine in the 'North British Review.' But that night his thoughts came out tumbling with a freshness, an originality, and a power, which somewhat disappeared when he came to write them out in elegant English.

"From that date he expected me to go out to Portobello or Musselburgh and see him when I went to Edinburgh, which I commonly did once or twice a year. I took care not to intrude upon him the night before the bi-weekly issue of his paper; but I always found him welcoming me on the Wednesday or Saturday night when the hard work of composition was off his mind. On these occasions he showed me his museum, with the feeling of a boy showing his toys to his companion. He sometimes, but not often, talked of church matters; but it was evident that having to write and speak so much about them he rather kept off them with me—except, indeed, that he was ever ready to speak of the great religious cause of the freedom of the church, as imbedded deep in the hearts, even as it was in the history, of Scotchmen, and certain in the end to triumph. Sometimes we talked of geology and religion and the difficult problems which they started. At times I introduced a topic new to him, as on one occasion 'Comte's Classification of the Sciences and the Positive Philosophy,' not so well-known then as now. It was extremely interesting to watch his mind grasping the new ideas, apprehending but not yet fully comprehending them. In next paper he had an article on the subject, but it is evident that his mind had not yet settled down into clearness, and the written composition had not the full expanse of the conversation. Had he lived he would certainly have grappled with the 'Positive Philosophy' as he did with the 'Vestiges of Creation.'

"Having great confidence in his singleness of purpose and his far-sighted wisdom, I consulted him when I was about to be called to the Chair of Logic and Metaphysics in Belfast, stating to him my difficulty about giving up my pastoral work. He gave me a clear and unequivocal advice. 'If a man,' says he, 'has decidedly a high heaven-bestowed gift—even if it should be that of a mason or mechanic—he should exercise it to the glory of God. You have,' he was pleased to add, 'such a gift; go and use it, and God will open spheres of usefulness to you.'

"The last conversation I had with him was in the early autumn of the year before his decease. He was completing his last work, 'The Testimony of the Rocks,' and we went over the topics discussed in it. I was struck then, as I ever was, with his powerful memory

and his special acquaintance with the English literature of last century—I suspect it was the literature most accessible to him in his younger years. He could quote verbatim long passages from the poets of that epoch, illustrating points casting up from the conversation. As we took the usual walk through his museum he freely allowed that the apparent breaks between the various geological epochs and animals were being fast filled up by new geological discoveries, and showed the same examples as we went along. It was evident to me that he was setting himself to a thorough grappling with these facts, and to a consideration of their relation to the great truths of natural and revealed religion. Often do some of us wish that he had been spared to take his place in the more formidable conflicts of these times.

"In common with not a few others, I looked on Hugh Miller as the greatest Scotchman left after Thomas Chalmers fell. These two men differed in many points, but they were essentially kindred spirits; they were alike in their high aims; in their lofty genius; in the moving power of their writings; in their partiality for the study of the works of God; in their deep reverence for the Word of God; in their desire to unite science and religion, and attachment to the principles of the Church of Scotland. What Chalmers did for the older sister, astronomy, Miller has done for the younger, geology, in wedding her to religion. Both lived for the purpose of elevating their countrymen and their race; and in order to effect this end both labored to promote the church's independence and the freedom of its members. Each had his own field of influence; each had a class of minds on whom he exercised a burning and enduring power for good. Most appropriately, now that their day's work is done, do they sleep side by side in the same grave-yard.

"I am tempted to compare Miller, and when I compare him, to contrast him with another eminent Scotchman, Robert Burns. Both were sprung from the nobler order of the Scottish peasantry; neither was originally educated as a scholar; both rose to the highest eminence in the midst of difficulties which led the one as well as the other seriously to propose emigrating to America; both had a deep love for Scotland and her common people; both will go down through all coming ages as household words, and as representatives of the intelligence of the sons of toil in their native land; and both were characterized by a noble modesty and a manly independence of nature—'Owre blate to seek, owre proud to snool.' But with the resemblances there were differences. In respect of native genius they rank in my view equally high; but the complexion and bent of that genius differed in the two individuals. No one would compare any poetry published by Hugh Miller with the poetry of Robert Burns; though there are passages of very high poetic power in all the prose works of Miller. Let us only look at that bold sketch of a proposed Epic towards the close of the sixth Lecture of his 'Testimony of the

Rocks,' in which he represents Lucifer, son of the morning, cast down on the Pre-Adamite earth, while yet a half-extinguished volcano; then, as ages roll on, moving amidst tangled foliage and ravenous creatures, horrid with trenchant tooth and barbed sting, and enveloped in armor of plate and scale, marking all the while and wondering at the progressive work of God, as animal follows plant, and man succeeds animal, and seeking to frustrate it by diabolical wiles, which, however, only fulfill the eternal counsels of Heaven, and issue in the crowning work, the descent and death and ascension of the Incarnate Son of God. Greater as a poet, Robert Burns can not be placed as a thinker, or a man of science, or a writer of prose, on the level of Hugh Miller. Dugald Stewart expressed his surprise to find Burns form so correct an idea of the then prevailing theory in Edinburgh, which referred all beauty to the association of ideas, a theory which seems to have gained the momentary assent of Burns in spite of his own better sense and truer feeling: 'That the martial clangor,' he says, 'of a trumpet had something in it vastly more grand, heroic, and sublime, than the twingle-twangle of a Jew's-harp; that the delicate flexure of a rose-twig, when the half-blown flower is heavy with the tears of dawn, was infinitely more beautiful and elegant than the upright stalk of the burdock, and *that* from something innate and independent of all association of ideas—these I had set down as irrefragible orthodox truths, until perusing your book shook my faith.' No one who had conversed with Hugh Miller would have expressed surprise that he was capable of understanding such truths. He must have been in the clouds himself, who, in talking with him, did not confess that Hugh Miller could soar as high as he, and keep well-balanced pinions all the while. He had no difficulty in understanding the Association Theory, and many other theories of Hume and Brown as well, and in brushing away them and some other meager or misty explanations by a few brief but cogent facts and arguments. In his works he has combined, as no working man ever did before, lofty speculation with rigid science, and irradiated the whole with the corruscations of poetry. Nor is it to be omitted that there is a far more important point of difference between the Ayrshire plowman and the Cromarty mason. Both were men of naturally strong passions; but where the one yielded to the temptations that assailed him,

> "'And thoughtless follies laid him low,
> And stained his name.'

the other resisted with all his might. As I conversed with Hugh Miller, or after parting with him, with his words of power still ringing in my ears, often have I felt, and said too,—but not in his hearing,—'What an amount of mischief would that mighty man have done had he, say on his being tempted by his brother masons at

Niddry, given way where he stood firm; had he, like Burns, joined the foes of evangelical religion, instead of becoming its defender; or had he, when at one time tempted to skepticism, abandoned the religion of the Bible, with "its grand central doctrine of the true humanity and true divinity of the adorable Savior" (to use Miller's language), and gone after some plausible form of nature-worship or man-worship.' I feel as if his country and his Church had not, when he was yet alive, been sufficiently grateful to God for raising such a man to guide aright so large a portion of the thinking mind of Scotland at a most critical era in its history.

"Every man in Scotland had heard of Hugh Miller. Noble lords were in the way of pointing their sentences and securing a plaudit by an allusion to him. The artisan and peasant felt that he was one of themselves, and one who (unlike some others sprung from their ranks) never felt ashamed of them, or his connection with them. The infidels knew him well, for many a hard blow had he dealt them; and they were obliged to respect while they feared him. The religious community recognized him as in certain departments the ablest, as he was the most disinterested, defender of the faith. Scientific men recognized in him one who could cope with them in their own department, who knew the facts as well as they, and could reason them out with greater power. Literary men acknowledged in him a brother who could mold a sentence or turn a period with the best of them. The ablest and boldest man in the country would have felt his knees shaking at the thought of engaging in a controversy with the stone-mason. Even those who had no learning relished him; and some have earnestly wished to be better scholars that they might understand him; and some have made themselves scholars by spelling their way through his writings. Thinkers in no way inclined to agree with him in his ecclesiastical or political opinions took the *Witness*, because they liked to have thoughts awakened within them; and even those who were not particularly disposed to think, read his writings for the sake of their pictorial power and noble sentiment. One of the most distinguished assemblies I ever looked on met in the City Hall of Glasgow, in September, 1855, to hear the opening address of the president, the Duke of Argyll, to the British Association for the Promotion of Science. There were present a very large number of the *savans* of the age, and mingling with them a number of others quite sufficient to make the audience a singularly promiscuous one,—shrewd merchants who traded with the ends of the earth, and other not less excellent merchants, who were not particularly shrewd, and who were conversant with little other literature than the *Glasgow Herald*, and along with them their wives and daughters, some of them *blue stockings*, but others—quite as useful members of the family—who knew cookery vastly better than geology. In addressing the assembly, the noble duke gave us a panoramic view of a number of the most distinguished scientific men of the day, and an

epitome of their discoveries. Many of them were cheered as their names passed in brief review; but there were two whose names called forth the loudest and most repeated shouts. The one of these was a prince in rank, even as he is a prince in science. Prince Lucien Bonaparte, the cousin of the then ally of England in the Russian war, received a cheer worthy of Glasgow. There was just one other who was acclaimed by so loud a burst; and some of us observed with interest that in his case the cheer came from every heart, and from a greater depth in the heart; that cheer was in honor of one—we need not name him, but when his name was pronounced it moved the vast assembly simultaneously like an electric shock—of one of nature's noblest, made noble not by the hand of man, but by the evident mark of God upon him.

"But fame was not the idol before which this great man bowed. The love of reputation was but an under-current in his soul. He lived to do a work, but it was for the glory of God and the good of mankind. I watched him with interest, as many did, in the meetings of the Geological Section of the British Association; and I observed that he sat, and stood, and spoke, and moved with the most perfect simplicity. There was no bravado on the one hand nor mock humility on the other; there was no courting of popularity, no tricks to draw attention; no looking round to see if men and women were gazing at him. He received the advances of distinguished individuals with deference, and was gratified by them; but there was no fawning or flattery on his part, and he received in precisely the same manner (as some of us can testify) the most obscure of his old friends, and assumed towards them no airs of superiority or of patronage. Whatever might be the situation in which he was placed, one felt in regard to him that the fiddlers struck up the right tune, when, after his health was drunk at a parting dinner at Cromarty, they played, 'A man's a man for a' that.' But I would not be exhibiting his full character if I did not add, that, bending before no man, he ever bowed in lowliest reverence before his God; that seeking no patron, climbing by no dirty arts, and determined to be dependent on no man, he ever felt and acknowledged his dependence on a higher power.

"PRINCETON, NEW JERSEY, Jan. 1870."

CLOSING SCENES.

Hugh Miller's capacity for work was not what it once had been. He used, he said, to write an article at a sitting; he now liked to do it in two, relieving himself by a walk in the interval. This was in the summer of 1855, and the weakness which even then was stealing over him continued, month by month, to increase. The mason's disease—the presence of particles of stone in the lungs—augmented

the torturing irritation of repeated inflammatory attacks in this most sensitive organ. The tendency to brood,—to live in a world of thought, and meditation, and phantasy, apart from that of living men,—which he had manifested from childhood, grew upon him as his physical energies decayed. That imaginative timidity, also, which had made a man who, if confronted by a lion, would have looked it down, arm himself with pistols against the assassin who might lurk in the recesses of a wooded glen, or haunt a lonely road at midnight, fed itself on the accounts of garotte robberies, house-breakings, outrages by ticket-of-leave men, of which, in the autumn of 1856, the newspapers had more perhaps than the dismal average. Hugh Miller sympathized with Mr. Carlyle in his views as to the necessity of subjecting to a rigorous discipline our professional criminals, and the folly of leaving men whom repeated conviction has proved to be incorrigible to prey upon the community. He wrote upon the subject in the *Witness*, and it was much in his mind. A slight circumstance was sufficient to give the matter a personal turn, and to convince him that he was himself exposed to danger. In a corner of the grounds at Shrub Mount, Portobello, where he now resided, a building had been reared under his direction for the accommodation of his beloved specimens, and he was impressed with the idea that it might be broken into and robbed by the prowling miscreants who were never absent from his imagination. One evening his eldest boy, having been in the garden after dark, returned with the news that he had seen a lantern moving among the trees, and had heard whispered voices. Miller went out to survey the ground; and though nothing appeared to be amiss, the attention of the household was awakened, and night after night the children and the servants had tales to tell of mysterious sounds having been heard, and strange sights having been seen. All this influenced his imagination, and pistol and sword were ever in readiness to repel attack.

At this time Mrs. Miller and her husband occupied different sleeping apartments. A severe illness had almost deprived Mrs. Miller of the use of her limbs, and it was not without great pain that she could go up stairs. It was therefore necessary for her to have her bedroom on the ground floor. For him, on the other hand, the air of an upper apartment was considered best, and he slept in a small room adjoining his study, on the second floor. Every morning and evening, during one of his illnesses, Mrs. Miller ascended to his room, "at the cost of an hour's severe pain," to minister to his wants. At other times, when his strength permitted, and her limbs were powerless, he would carry her in his arms to her sofa, "in the kindest and tenderest manner."

One night Mrs. Miller was startled by her husband bursting into her room at midnight, with fire-arms, she thinks, in his hand, and asking in a loud voice whether she had heard unusual noises in the house. She answered composedly that she had heard nothing. He

went into his eldest daughter's room, and made the same inquiry. Soothed apparently by the result, he retired to his own room.

There were other matters, however, besides this imaginative excitement on the subject of robbery, which, as the months of autumn were succeeded by those of winter, occasioned deep anxiety to Mrs. Miller. The time was approaching when the "Testimony of the Rocks" was to see the light, and her husband was working at it with indomitable resolution. His activity had always been high-strung, but there was now a feverish intensity in his application which amazed and saddened Mrs. Miller. He had been on the whole a calm and regular worker, had loved the morning air and devoted the hours of night to slumber; he now moved restlessly about during the day, as if unable to concentrate his thoughts, and only as the darkness fell aroused his intellectual energies and compelled them to their task. Night after night, in spite of entreaties, he commenced his toil when the rest of the family retired to rest. Through the long, silent hours his tired and throbbing brain was forced by his iron will to forge link after link in the argument he was drawing out. Sometimes, when Mrs. Miller awoke in the morning, she heard, as she thought, the servants beginning their work, but found that it was her husband leaving his. The slightest noise distressed him. That his nerves were in a state of disorder Mrs. Miller could not doubt, but the dread which tormented her was that of apoplexy. Of insanity she never thought until the appearance of other symptoms, but the vision of Hugh Miller struck down by apoplexy and carried into the house constantly haunted her. At night, before bidding him farewell, she would linger, on one pretense or another, trying to find an opportunity to remonstrate against his vigils; but she saw that he was nervously irritable, and she often feared to speak, lest the evil she wished to abate might be aggravated.

Although any one who was constantly and closely with him could not but remark the change which had taken place, his manner with friends who saw him in occasional interviews remained unaltered. Perhaps a deeper tone of earnestness mingled in the genial flow of conversation with which he entertained every visitor, and the reverence and godly fear which lay at the very roots of his being became more than usually conspicuous. On Thursday, the 18th of December, a friend who had a long conversation with him, "never enjoyed an interview more, or remembered him in a more genial mood." On the Saturday following, another friend from Edinburgh found him in the same state. True to a habit which had characterized him from his youth, of leading the conversation to some book or topic which was occupying his mind, he repeated with deep feeling a prayer of John Knox's, which, he said, "it had been his frequent custom to repeat privately during the days of the Disruption." There was no name which represented more for Hugh Miller than that of John Knox. The Scotland of Knox and the Puritans was the Scotland

which he loved; the Church of Knox was the Church for which he had toiled when his strength was in its meridian, and when his dawning fame first thrilled him with rapture; the faith of Knox was the faith to which, after Hume and Voltaire and Lamarck had done their worst, he still anchored his soul.

Next day Mr. and Mrs. Miller went to church in the forenoon, and, on the way home, he remarked that the wind was cold, and that he did not feel well, and asked whether she would remain at home with him in the afternoon. She consented, adding that she was very tired, and that one of her limbs pained her. Mrs. Miller usually went to church in a basket phæton, but did not use it that day, and her husband observed affectionately that he wished he could carry her. In a lane opening on the main road, a few yards from the gate of Shrub Mount, there was a poor woman who, some days previously, had met with an accident, and Mrs. Miller now said that she would go and inquire for her, remaining not more than a few minutes. An expression of pain crossed his face, as if he disliked the momentary separation.

The time of the afternoon service, the rest of the household being in church, was passed by Hugh Miller and his wife in solemn thoughtful converse. The reader knows what she was to him. She had been his friend, respected for her intellect, honored for her character, before he loved her; and when he did love her, it was with the intense and passionate devotion of a strong man, who never loved woman but one. . . . On this Sunday afternoon he was in his most tender and confidential, which was always also his religious mood; no secular matters were spoken of. . . . His affection was so ardent that Mrs. Miller regarded it with something of surprise. He suddenly seized her hand, and kissed it with a manner she had never seen before. "There was in it a great deal more than affection—an air of *courtliness*, so to speak, indescribable." In pondering on this action, Mrs. Miller has asked whether it could possibly have had the meaning of a farewell. Comparing it with the strange and painful expression which flitted across his countenance as they came from church, she is persuaded that he was haunted by the dread of some prostrating stroke, and that there were sensations in his brain which gave him the idea that it might be near. He was certainly haunted by some great terror; but it was not the fear of apoplexy, it was the fear of an overmastering paroxysm of insanity. He spent the evening quietly, reading a little book on a religious subject, and writing a brief notice of it for the paper.

On Monday morning Mrs. Miller made her way upstairs before breakfast, and met him on the top of the stairs. He said that he had passed a bad, restless night. At breakfast, which only Mrs. Miller and his eldest daughter partook with him, his conversation was animated and copious. He ate nothing, however, merely swallowing a cup of tea, and his mind was evidently occupied with his

sensations in the night. He spoke of sleep-walking, and told an anecdote of a student who had left his room, clambered on the roof, entered an adjoining house, divested himself, night after night, of his shirt, and hidden the garments, to the number of half-a-dozen, in a cask of feathers. Breakfast over, he recurred to the subject which had never been from his thoughts. "It was a strange night," he said; "there was something I didn't like. I shall just throw on my plaid, and step out to see Dr. Balfour." Dr. Balfour lived in Portobello, and was in customary attendance upon Mr. Miller and his family. The proposal of her husband astonished Mrs. Miller. During his whole life he had shown the utmost reluctance to take medical advice, and this was the first time she had ever known him speak of going voluntarily in quest of a doctor. She cordially approved of his determination, and, at about ten o'clock, he presented himself to Dr. Balfour.

Of the consultation which followed Dr. Balfour has given a full report. "On my asking," says the doctor, "what was the matter with him, he replied, 'My brain is giving way. I can not put two thoughts together to-day; I have had a dreadful night of it; I can not face another such. I was impressed with the idea that my museum was attacked by robbers, and that I had got up, put on my clothes, and gone out with a loaded pistol to shoot them. Immediately after that I became unconscious. How long that continued I can not say; but when I awoke in the morning I was trembling all over, and quite confused in my brain. On rising I felt as if a stiletto was suddenly, and as quickly as an electric shock, passed through my brain from front to back, and left a burning sensation on the top of the brain, just below the bone. So thoroughly convinced was I that I must have been out through the night, that I examined my trousers, to see if they were wet or covered with mud, but could find none. I was somewhat similarly affected through the night twice last week, and I examined my trousers in the morning, to see if I had been out. Still the terrible sensations were not nearly so bad as they were last night. Towards the end of last week, while passing through the Exchange in Edinburgh, I was seized with such a giddiness that I staggered, and would, I think, have fallen, had I not gone into an entry, where I leaned against the wall, and became quite unconscious for some seconds.'" Dr. Balfour informed him that he had been overworking his brain, and agreed to call at Shrub Mount on the following day to make a fuller examination.

Mr. Miller had no sooner left the house to seek Dr. Balfour, than Mrs. Miller, turning to her daughter, said: "There is something unusual the matter with your father; I can not be satisfied without more advice. I am quite certain he would make some difficulty about it; therefore you and I will go up by the twelve o'clock coach, and make an appointment with Professor Miller to come down here." When Mr. Miller returned, he mentioned that he had a funeral to

attend at two o'clock, and would go to Edinburgh by the twelve o'clock coach. She told him that she and Miss Miller, having some thing to do in town, were to go at the same time. He inquired particularly what was their errand, and Mrs. Miller, "acting under a stern and inexorable necessity," put him off with the statement that they wished to see a picture then being exhibited in Prince's street. The picture was there, they wished to see it, and they actually did so on this occasion; but the principal object of their trip to town remained unseen in the background. Professor Miller, "with his usual quick, decisive kindness," said, "I'll be down to-morrow at three o'clock." Mrs. Miller arranged that Dr. Balfour should come at the same hour.

When she returned home, she found her husband already there, resting on the sofa in the dining-room. He told her what he had been doing since they parted, dwelling especially on the precautions which he was using to avoid taking cold. In return, he wanted to know exactly what his wife and daughter had been about in town. "We saw the picture as we intended." "Nothing else? Was that really your chief business?" Mrs. Miller saw that a suspicion of the true state of affairs had crossed his mind. She feared his serious displeasure, and thought it possible that, if not treated with frankness, he might keep out of the way and defeat her main aim. With hesitation, therefore, and placing her hand on his forehead, "Don't," she said, "be displeased. I went likewise to Professor Miller to ask him to come and see you. He is to come at three to-morrow. You won't object—you won't throw any obstacle in the way—if it were only to relieve *my* mind?" He made no answer, and remained silent for a considerable time. At the moment he was, Mrs. Miller thinks, displeased; but the shadow soon passed from his face, and during the evening he was in his gentlest, kindest mood.

Next morning Mrs. Miller again met him at the top of the stairs before breakfast, and was relieved to find that he had passed a better night. Immediately after breakfast he began to correct the last proofs of the "Testimony of the Rocks." About midday he became restless, and she feared that he might make some movement which would prevent the consultation. The day was bitterly cold, with drizzling rain. She made pretenses to be near him, watchful lest he should slip away unnoticed. At last he proclaimed his intention of going up to town to anticipate Professor Miller's visit. "I can not bear," he said, "taking him down in this way. You know his generosity, and he has so much to do." "Well, believe me," replied Mrs. Miller, "there's not much he has to do he would put in competition with coming to see you when you need it. Just look at the day. You know that, if you go out, you will bring on another inflammatory attack in your chest, and then I shall have done more harm than good. Do stay now, and let things go on, if you never do again." "Well," he answered, "I will." Mrs. Miller was passing his chair at the moment, and putting her hand into the

shaggy hair which he used to wear on the top of his head, she gave it a slight tug, "half a caress, half a playful rebuke for his contumacy," while she thanked him for complying. "Don't," he said mildly; "it hurts me."

The medical gentleman arrived and the interview commenced. "We examined his chest,"—such is Professor Miller's report,—"and found that unusually well; but soon we discovered that it was head-symptoms that made him uneasy. He acknowledged having been night after night up till very late in the morning, working hard and continuously at his new book, 'which,' with much satisfaction he said, 'I have finished this day.' He was sensible that his head had suffered in consequence, as evidenced in two ways: first, occasionally he felt as if a very fine poniard had been suddenly passed through and through his brain. The pain was intense, and momentarily followed by confusion and giddiness, and the sense of being very drunk, unable to stand or walk. He thought that a period of unconsciousness must have followed this—a kind of swoon—but he had never fallen. Second, what annoyed him most, however, was a kind of nightmare, which for some nights past had rendered sleep most miserable. It was no dream, he said; he saw no distinct vision, and could remember accurately nothing of what had passed. It was a sense of vague and yet intense horror, with a conviction of being abroad in the night wind, and dragged through places as if by some invisible power. 'Last night,' he said, 'I felt as if I had been ridden by a witch for fifty miles, and rose far more wearied in my mind and body than when I lay down.' So strong was his conviction of having been out, that he had difficulty in persuading himself to the contrary, by carefully examining his clothes in the morning to see if they were not wet or dirty; and he looked inquiringly and anxiously to his wife, asking if she was sure he had not been out last night, and walking in this disturbed trance or dream. His pulse was quiet, but his tongue foul. The head was not hot, but he could not say he was free from pain. But I need not enter into professional details. Suffice it to say, that we came to the conclusion that he was suffering from an overworked mind, disordering his digestive organs, enervating his whole frame, and threatening serious head affection. We told him this, and enjoined absolute discontinuance of work, bed at eleven, light supper (he had all his life made that a principal meal), thinning the hair of the head, a warm sponging-bath at bed-time, etc. To all our commands he readily promised obedience. For fully an hour we talked together on these and other subjects, and I left him with no apprehension of impending evil, and little doubting but that a short time of rest and regimen would restore him to his wonted vigor."

It may occur to many to ask how it could happen that medical men so circumspect, so vigilant, so able, as Professor Miller and Dr. Balfour, having become acquainted with these symptoms of insanity,

did not suggest that precautions should be taken, to the extent at least of removing fire-arms from the person and presence of their patient. Miller's fear of robbery had returned in all its force. A revolver lay nightly within his reach. A broad-bladed dagger was ready to his hand. At his bed-head lay a naked sword. Why were not these taken away? The reply is, that, though paroxysms of madness had already visited Miller, he had revealed no trace of suicidal mania, and the circumstances under which his mental disorder had originated were not such as to suggest alarm. His brain had been overworked; but the labor which had shaken his nerves and sapped his strength had been congenial to him; and his conversation was that of one who looked with hope and with interest to the future. His intellect, besides, apart from the maniacal belief which at moments oppressed it, that he was made the sport of demons in the night, was strong and clear. That powerful action of the mind may take place even when it is under the spell of overmastering mania is demonstrated by the fact that Cowper wrote in a single day, while suffering "the most appalling mental depression," the "Castaway," a poem which, in the masculine brevity of its narrative, and the concentration of its magic power, is altogether masterly. Listening to the conversation of Hugh Miller, which, even while he described the agonies that tortured him, attested the vigor of his faculties, the medical gentlemen never thought it possible that intensity of mental horror might suddenly paralyze his will, and deprive reason of control over his actions. It is so easy to be wise after the event! so difficult to forecast the steps of destiny! The riddle of the Sphynx, once we know its solution, looks childishly simple; and yet it took an Œdipus to read it.

Professor Miller and Dr. Balfour having left Shrub Mount, it was now time for dinner. The servant entered the dining-room to spread the table, and found Mr. Miller alone. The expression which once or twice already had been observed on his features was again there. His face was so distorted with pain, that she shrank back appalled. He lay down upon the sofa and pressed his head, as if in agony, upon the cushion.

The paroxysm flittered by, and when Mrs. Miller returned to the dining-room he was in apparent health. She naturally shared the hopeful anticipations which Professor Miller had expressed, and her mind would dwell with comfort on the regimen and rest which were now, by medical authority, to be brought to bear upon his case. After dinner the conversation turned upon poetry. Miss Miller, "then just blooming into womanhood, between sixteen and seventeen years of age," was at the time attending classes, and among other tasks had to produce verses upon given themes. She consulted her father upon her performances, and he would take the opportunity of delivering a chatty little lecture upon poetry, taking down from the shelf the works of some well-known author, to serve for the

illustration of his remarks. This evening the subject of lecture was Cowper, one of his supreme favorites. He ranked the bard of Olney, both in poetry and in prose, among the great masters of the English language. The verses on Yardley Oak he would often refer to, as evincing the wonderful power with which Cowper could bend the roughest words to suit his purposes of delineation and of melody. The lines are perhaps the fittest which a critic could select to illustrate the genius of Cowper. They have that brief, decisive force by which, at his best, he recalls the mighty touch of Dryden, with a vivid, eye-to-eye truth to nature, which reminds us that Cowper, if the poetical child of Dryden, was the poetical sire of Wordsworth:

"Thou wast a bauble once; a cup and ball,
Which babes might play with; and the thievish jay,
Seeking her food, with ease might have purloined
The auburn nut that held thee, swallowing down
Thy yet close-folded latitude of boughs,
And all thine embryo vastness, at a gulp.
But fate thy growth decreed; autmnal rains
Beneath thy parent-tree mellowed the soil
Designed thy cradle; and a skipping deer,
With pointed hoof dibbling the glebe, prepared
The soft receptacle, in which, secure,
Thy rudiments should sleep the winter through."

The vein of reflection, too, obscured by no mysticism, yet touching on deep things, which runs through the piece, would please Miller.

"While thus through all the stages thou hast pushed
Of treeship,—first a seedling, hid in grass;
Then twig; then sapling; and, as century rolled
Slow after century, a giant bulk
Of girth enormous, with moss-cushioned root
Upheaved above the soil, and sides embossed
With prominent wens globose,—till at the last
The rottenness, which Time is charged to inflict
On other mighty ones, found also thee.
What exhibitions various hath the world
Witnessed, of mutability in all
That we account most durable below!
Change is the diet on which all subsist,
Created changeable, and change at last
Destroys them. Skies uncertain now the heat
Transmitting cloudless, and the solar beam
Now quenching in a boundless sea of clouds;
Calm and alternate storm, moisture and drought,
Invigorate by turns the springs of life
In all that live, plant, animal, and man,
And in conclusion mar them. Nature's threads,
Fine passing thought, even in her coarsest works,
Delight in agitation, yet sustain
The force that agitates, not unimpaired;
But worn by frequent impulse, to the cause
Of their best tone their dissolution owe."

Mrs. Miller's little Christmas volume, "Cats and Dogs," which has since been highly popular, was then passing through the press. Mr. Miller took a lively interest in it, and gave a warmly favorable opinion of its qualities. He now asked the children if they knew Cowper's lines "To a Retired Cat," and, on their answering in the negative, read them with sprightly appreciation. The cat, it may be remembered, finding an open drawer, lined with the softest linen, concludes that it has been prepared expressly for her accommodation, falls fast asleep in it, is immured by the chamber-maid, and is in danger of being starved.

"That night, by chance, the poet watching,
Heard an inexplicable scratching;
His noble heart went pit-a-pat,
And to himself he said, 'What's that?'
He drew the curtain at his side,
And forth he peeped, but nothing spied;
Yet, by his ear directed, guessed
Something imprisoned in the chest,
And, doubtful what, with prudent care,
Resolved it should continue there.
At length, a voice which well he knew,
A long and melancholy mew,
Saluting his poetic ears,
Consoled him and dispelled his fears;
He left his bed, he trod the floor,
He 'gan in haste the drawers explore,
The lowest first, and without stop
The rest in order to the top.
For 'tis a truth well known to most,
That whatsoever thing is lost,
We seek it, ere it come to light,
In every cranny but the right.
Forth skipped the cat, not now replete
As erst with airy self-conceit.

. . . . . .

The father reading and remarking; the children with happy faces and merry trills of laughter clustered round his knee; the mother tranquillized and hopeful after her terrible anxieties of the preceding days,—such is the spectacle which, on this Tuesday evening, two days before Christmas, 1856, we behold in the home of Hugh Miller. Mrs. Miller was making tea, when she heard his voice "in tones of anguish," reading "The Castaway." Here are a few of the verses:

"Obscurest night involved the sky,
The Atlantic billows rolled,
When such a destined wretch as I,
Washed headlong from on board,
Of friends, of hope, of all bereft,
His floating home forever left.

"Not long beneath the whelming brine,
Expert to swim, he lay;
Nor soon he felt his strength decline,
Or courage die away;
But waged with death a lasting strife,
Supported by despair of life.

"He long survives who lives an hour
In ocean, self-upheld;
And so long he, with unspent power,
His destiny repelled;
And ever, as the minutes flew,
Entreated help, or cried 'Adieu!'

"At length, his transient respite past,
His comrades, who before
Had heard his voice in every blast,
Could catch the sound no more.
For then by toil subdued, he drank
The stifling wave, and then he sank.

"No poet wept him; but the page
Of narrative sincere,
That tells his name, his worth, his age,
Is wet with Anson's tear;
And tears by bards or heroes shed
Alike immortalize the dead.

"I therefore purpose not, or dream,
Descanting on his fate,
To give the melancholy theme
A more enduring date;
But misery still delights to trace
Its semblance in another's case.

"No voice divine the storm allayed,
No light propitious shone,
When, snatched from all effectual aid,
We perished, each alone;
But I beneath a rougher sea,
And whelmed in deeper gulfs than he."

Mrs. Miller, however, was not alarmed. She felt that her husband, in capacity of critic and reader, was merely bringing out by sudden and skillful contrast the range of Cowper's power, now archly droll, now sternly tragical.

Early in the evening, as might have been expected after that agitating day, Mrs. Miller began to feel weary. She went to the kitchen and gave particular orders about his bath; then, returning to the sitting-room, she remarked to him that she was "very, very tired," and would be forced to leave him sooner than usual. "Now," he said, "that I am forbidden ale or porter, don't you think that in future I might have a cup of coffee before going to bed?" With

some hesitation she assented, and promised that the coffee should be brought him. The good-night kiss followed, and she retired to slumbers which were probably the deeper on account of the excitement and fatigue, the anxieties and consolations, of the preceding day. Miller went upstairs to his study. At the appointed hour he took the bath, but, alas! his intense repugnance to physic prevailed over him, and the dose of prescribed medicine was left untouched. From his study he went into his sleeping-room and lay down upon his bed.

At what hour can never be ascertained, but either in the dead of night or in the gray dawn of morning, he arose from the bed and half dressed himself. Then the trance of paroxysmal horror again came over him, and the maniacal persuasion which had for days been haunting him drove him mad. He rushed to the table, and, on a folio sheet of paper, on the center of the page, traced the following lines:

"DEAREST LYDIA: My brain burns. I *must* have *walked;* and a fearful dream rises upon me. I can not bear the horrible thought. God and Father of the Lord Jesus Christ, have mercy upon me! Dearest Lydia, dear children, farewell! My brain burns as the recollection grows. My dear, dear wife, farewell!

"HUGH MILLER."

The iron resolution and courage of the man appeared even in the maniac. He wore a thick woven seaman's jacket over his chest. This he raised on the left above the heart, and, applying the muzzle of his revolver, fired. The ball perforated the left lung, grazed the heart, cut through the pulmonary artery at its root, and lodged in the rib on the right side. The pistol slipped from his hand into the bath, which stood close by, and he fell dead instantaneously. The body was found lying on the floor, and the feet upon the study rug.

A *post-mortem* examination having been made, the following report was the result:

"EDINBURGH, December 26, 1856.

"We hereby certify on soul and conscience, that we have this day examined the body of Mr. Hugh Miller, at Shrub Mount, Portobello.

"The cause of death we found to be a pistol-shot through the left side of the chest; and this, we are satisfied, was inflicted by his own hand.

"From the diseased appearances found in the brain, taken in connection with the history of the case, we have no doubt that the act was suicidal, under the impulse of insanity.

"JAMES MILLER, W. T. GAIRDNER,
"A. H. BALFOUR, A. M. EDWARDS."

It is a melancholy satisfaction to reflect, that in no case of suicide which ever took place, can the evidence of insanity have been more express or conclusive, Had no trace of disease been found in the brain; had no word written by Hugh Miller at the last attested madness—the overwork to which he had subjected himself, the excitement to which he had been a prey would have afforded adequate grounds for believing him insane. But the actual mania which was gaining the mastery over him had been defined by himself some days before his death; and this mania, namely, that he was driven by witches or demons in the darkness, is specified beyond possibility of mistake or doubt, in the thrilling words, "I *must* have *walked.*" That even when he was the victim of mania, the tenderness of his nature survived; that he could still discriminate the supremacy of his affection for the wife of his youth; that the cry of his heart, when reason was eclipsed in madness and the shadow of death fell on the reeling brain, rose clear to God the Father and the Lord Jesus Christ—will be dwelt on with sad interest by those whom Hugh Miller taught to love him with inexpressible love.

"The body," writes Dr. Hanna, who was one of the first to see it, "was lifted and laid upon the bed. We saw it there a few hours afterwards. The head lay back, sideways, on the pillow. There was the massive brow, the firm-set, manly features, we had so often looked upon admiringly, just as we had lately seen them—no touch nor trace upon them of disease—nothing but that overspread pallor of death to distinguish them from what they had been. But the expression of that countenance in death will live in our memory forever. Death by gun-shot wounds is said to leave no trace of suffering behind; and never was there a face of the dead freer from all shadow of pain, or grief, or conflict, than that of our dear departed friend. And as we bent over it, and remembered the troubled look it sometimes had in life, and thought what must have been the sublimely terrific expression that it wore at the moment when the fatal deed was done, we could not help thinking that it lay there to tell us, in that expression of unruffled majestic repose that sat upon every feature, what we so assuredly believe, that the spirit had passed through a terrible tornado, in which reason had been broken down; but that it had made the great passage in safety, and stood looking back to us, in humble, grateful triumph, from the other side."

The excitement occasioned by the event throughout Scotland was tremendous, and no such funeral had taken place in Edinburgh since that of Chalmers. He was laid in the Grange Cemetery, near the spot where Chalmers rests.

From a large number of letters received by Mrs. Miller on the occasion of her husband's death, the two which follow are selected for publication:

"TAVISTOCK HOUSE, LONDON,
"Thursday, April 16, 1857.

"DEAR MADAM:—Allow me to assure you that I have received the last work of your late much-lamented husband with feelings of mournful respect for his memory and of heartfelt sympathy with you. It touches me very sensibly to know, from the inscription appended to the volume, that he wished it to be given to me. Believe me, it will fill no neglected place on my book-shelves, but will always be precious to me, in remembrance of a delightful writer, an accomplished follower of science, and an upright and good man.

"I hope I may, dear madam, without obtrusion on your great bereavement, venture to offer you my thanks and condolences, and to add that, before I was brought into this personal association with your late husband's final labor, I was one of the many thousands whose thoughts had been much with you.

"Yours faithfully and obliged,
"CHARLES DICKENS.

"MRS. HUGH MILLER."

"CHELSEA, April 15, 1857.

"MY DEAR MADAM:—Last night I received a gift of your sending, which is at once very precious and very mournful to me.

"There is forever connected with the very title of this book the fact that, in writing it, the cordage of a strong heart cracked in pieces; that the ink of it is a brave man's life-blood! The book itself, I already see, is full of grave, manly talent, clearness, eloquence, faithful conviction, inquiry, knowledge; and will teach me and others much in reading it, but that is already an extrinsic fact, which will give it a double significance to us all. For myself, a voice of friendly recognition from such a man, coming to me thus out of the still kingdoms, has something in it of religion, and is strange and solemn in these profane, empty times.

"In common with every body, I mourned over the late tragic catastrophe; the world's great loss, especially your irreparable and everlamentable one; but as for *him* I confess there was always present, after the first shock, the thought that at least he was out of bondage, into freedom and rest. I perceived that for such a man there was no rest appointed except in the countries where he now is!

"Dear madam, what can we say? The ways of God are high and dark, and yet there is mercy hidden in them. Surely, if we know any thing, it is that 'His *goodness* endureth forever.' I will not insult your grief by pretending to lighten it. You and your little ones, yes, you have cause, as few have had, to mourn; but you have also such assuagements as not many have.

"With respectful sympathy, with many true thanks and regards, I remain, Sincerely yours,

"T. CARLYLE."

"Politeness is the last touch, the finishing perfection of a noble character. It is the gold on the spire, the sunlight on the corn-field, the smile on the lip of the noble knight lowering his sword-point to his lady-love. It results only from the truest balance and harmony of soul. Hugh Miller possessed it. A duke in speaking to him would know he was speaking to a man as independent as himself; a boy, in expressing to him an opinion, would feel unabashed and easy, from his genial and unostentatious deference. He has been accused of egotism. Let it be fairly admitted that he knows his name is Hugh Miller, and that he has a colossal head, and that he once was a mason; his foible is probably that which caused Napoleon, in a company of kings, to commence an anecdote with 'When I was a lieutenant in the regiment of La Fere.' But we can not think it more than a very slight foible; a manly self-consciousness somewhat in excess. Years in the quarry have not dimmed in Hugh Miller that finishing gleam of genial light which plays over the frame-work of character, and is politeness. Not only did he require honest manliness for this; gentleness was also necessary. He had both, and has retained them; and therefore merits fairly

"'The grand old name of gentleman.'"

It was impossible to be long in Miller's company without perceiving the ardor of his devotion to science. He considered literature inferior to science as a gymnastic of the mind. For the facile culture of the age he had great contempt, and ranked both religion and labor as stimulating, training agencies for mind and character, higher than what is commonly called education. "As for the dream," he says in one of his books, "that there is to be some extraordinary elevation of the general platform of the race achieved by means of education, it is simply the halucination of the age—the world's present alchemical expedient for converting farthings into guineas, sheerly by dint of scouring." All that he had won had been won by stern effort, and he had no faith in royal roads to any kind of attainment.

A man of priceless worth; fine gold, purified sevenfold; delicate splendor of honor, sensitive and proud; perfect sincerity and faithfulness in heart and mind. He never failed a friend. His comrade of the hewing-shed sits down at his table when he has become one of the most distinguished men of his time; another friend is discovered to be at hand-grips with fortune, and he applies himself, with cunning delicacy, to solve the problem of inducing him to accept assistance. This was the manner and habit of the man.

Of his power of brain—of his genius and originality—his books, viewed in connection with the circumstances of his career, are the living witnesses. To their testimony must be added the fact of the great influence he exerted upon his contemporaries, the personal weight, the intellectual mass and magnitude, he was felt to possess. Profes-

sor Masson, commenting on the curious notion of a Fleet street oracle, that he was devoid of genius, has declared his conviction that, "if the word was applicable to the description of any mind, it was to the description of Hugh Miller's." If we estimate the amount of obstruction which lay between the mason lad of Gairlock and Niddry, and the Hugh Miller of Edinburgh, whom Murchison, Lyell, Agassiz hailed as a brother, we shall admit that the opinion is not *primâ facie* unreasonable. I take liberty to add that, if genius means an indefinable something, conferred by nature, inimitable, incommunicable, never given twice in exactly the same form and color—a power of enchantment which all men feel, but no man can quite describe—then the critic who denies genius to Hugh Miller does not understand his craft. He owed, without question, much to culture. Twenty years of study and practice, assiduous reading, careful self-correction, were required to perfect his prose style and to give him the complete command of it which he ultimately obtained. But all this only brought into clearness and use the gift born with him, a gift traceable in his earliest letters, a gift of tempered mental strength, of brightly keen perception and broad imaginative vision, a rare gift of expression, in subtly modulated sentence, and exquisitely felicitous image, and solemn harmony of sense and sound, and tenderly brilliant color lighting up the whole. Mr. Robert Chambers proved himself to have the true critical eye when he referred, at a very early period of their intercourse, to the singular *interest* attaching to all he wrote. The omniscient little critics who deny him genius may imitate that if they can; it secured Miller a large and intelligent audience throughout the civilized world, an audience whose ear he caught so soon as his power was revealed, and which thirty years after the publication of the "Old Red Sandstone," continues to extend.

So far as we can penetrate the charm of his composition, it lies mainly in the fine continuity of it, in the absence of all jerking, jolting movement, in the *callida junctura* not of word to word merely, but of sentence to sentence, thought to thought, illustration to illustration. An author's peculiar excellence, if we have rightly discriminated it, will give us a hint as to where we should look for his besetting fault, and in reading Miller long at one time, we may find in his billowy regularity and smoothness of movement a sense of monotony. Yet, after all, there is a marvelous enchantment in his books; the breath of the hills is in them, the freshness of the west wind and the sea. Shall we not now venture to decide—the question was left open when it last came before us—that it was advantageous for him to break away from school, and betake himself to the caves and the wood? Nature is the only safe nurse of genius; education is indispensable, but even the education must be suggested by nature, and come at her prompting. Shakespeare was an educated man; he had a large knowledge of the books of his time; but all genera-

tions would have been poorer if his brain had been drugged in boyhood with the trite erudition of Universities. Books came to Miller at the right moment; when he had already so filled his mind with Nature's imagery that they could do no more than genially assist him to use it. To read him is like taking a walk with him; we are never far from the crags and the waters, the dewy branch and the purple heather. Compare this with the prim urban elegance of Jeffrey, or the hard vehemence, like rainless thunder, or the full gallop of cavalry, of the style of Sir William Hamilton, and you will begin to realize how much Hugh Miller owed to the circumstance that his *Alma Mater* was his mother earth. As a naturalist, also, and as a geologist, his power came essentially from the same source. The hours on the ebb shore with Uncle Sandy; the tracing of the subtleties of life among the minute denizens of the crystal pools; the watching of the race of the waves when the tide turned, first slowly, tentatively, listlessly, each timorous wavelet with its lifted handful of dusty sand, then in hurrying, clamorous advance of leaping foam and marshaled surge along the reaches of the shore; the long years of toil in the quarry, and of wandering among the hills, to mark the fellowship of the rocks, and learn the joints and curvature of the bones of the world—these gave him his intuitive sympathy with Nature's ways, his geological eye to discern how THE ARCHITECT had put together this and that bit of the planet. "The thing was done so," he could say, "and not in the way you mention; you can fold up your theoretical demonstration when you please."

May we not call his life, first and last, beautiful, august, heroic? From the father, whose very image he in later years became, he derived the ground work of his character, and for the education of conscience he was primarily indebted, though he little knew it at the time, to his Uncle James. In early manhood he was encompassed with hardship, with coarseness, with manifold temptation. His soul took no taint. He rose superior to every form of vulgarity: the vulgar ambition of wealth, the vulgar ambition of notoriety, the vulgar baseness of sensuality and license. He aspired to fame, but it was to fame which should be the ratification of his own severe judgment. "I have myself," he said, "for my critic;" and while the decision of this sternest censor was even moderately favorable, no sneers could depress, no applause elate him. His course was a steadfast pursuit of truth and of knowledge, an unwearied dedication of himself to all that he believed to be true, and honest, and lovely, and of good report.

ROBERT AND WILLIAM CHAMBERS,

GRADUATES OF BOOK-STALLS,

Printers, Editors, and Publishers of the "Edinburgh Journal," "Chambers' Information for the People," "Chambers' Cyclopedia of English Literature," "History of the Rebellion of 1745," "Book of Days," etc., etc.

"HE THAT THOLES OVERCOMES."

PREFATORY NOTE.

On the death of my brother, Dr. Robert Chambers, numerous biographic sketches of him appeared, both in Great Britain and the United States, all of them kind and complimentary, but in many cases imperfect or erroneous as regards certain leading details. It seemed to me that, while still spared life and opportunity, I might try to do justice to the memory of the deceased, by giving a correct history of his life and principal writings.

The attempt, however, involved a difficulty. Having been intimately associated with my brother, not only in early life, but in literary enterprises, it was scarcely possible to relate the story of one without frequent reference to the other. I have so far yielded to this necessity, as to offer some Autobiographic Reminiscences, in subordination to the principal object in view. To this extent only do these pages sketch the history of two individuals.

I need hardly say that the retrospect of some early events, which could not well be omitted, has not been unaccompanied with poignant recollections; but if a perusal of the narrative serves in any degree to inspire youth with notions of self-reliance, along with a hopeful dependence on Providence when pressed by adverse circumstances, I shall be more than recompensed. W. C.

January, 1872.

ROBERT AND WM. CHAMBERS.

AUTOBIOGRAPHIC REMINISCENCES, ETC.

EARLY YEARS—1800 TO 1813.

MY brother and I were born and spent our early years in a small country town in the south of Scotland, situated amidst beautiful scenery, and had therefore the advantage—as advantage it might be called—of being acquainted from infancy with some of the noble works of nature, along with rural objects and circumstances. The place of our birth was Peebles, an ancient royal burgh on the upper part of the Tweed, where our ancestors had dwelt from time immemorial—the tradition among them being, that they were descended from a personage inscribed as "William de la Chaumbre, Bailif e Burgois de Pebles," in the list of those who signed bonds of allegiance to Edward I, 1296. However that might be, I was born in this little old burgh, 16th April, 1800; and Robert, coming next in order in the family, was born 10th July, 1802.

For the place of birth and early associations almost every one has a peculiar affection; and among the Scotch, as is well known, this feeling is a marked national characteristic. It will not seem surprising, therefore, that through life Robert cherished kindly remembrances of the scenes of his infancy. A few years previous to his decease, he began notes of what may have been intended as a memoir of himself, but which were not carried farther than reminiscences from the dawn of intelligence to about his tenth year. Fragmentary as are these memoranda, they abound in the geniality of sentiment for which the writer was remarkable, and serve to illustrate the state of things in certain by-corners of Scotland sixty to seventy years since. The following portions may accordingly be acceptable, supplemented here and there by such particulars from my own remembrance as may help to complete the picture:

"In the early years of this century," he proceeds, "Peebles was little advanced from the condition in which it had mainly rested for

several hundred years previously. It was eminently a quiet place—'As quiet as the grave, or as Peebles', is a phrase used by Cockburn. It was said to be a finished town, for no new houses (exceptions to be of course allowed for) were ever built in it. Situated, however, among beautiful pastoral hills, with a singularly pure atmosphere, and with the pellucid Tweed running over its pebbly bed close beside the streets, the town was acknowledged to be, in the fond language of its inhabitants, a bonny place. An honest old burgher was enabled by some strange chance to visit Paris, and was eagerly questioned, when he came back, as to the character of that capital of capitals; to which, it is said, he answered that 'Paris, a'thing considered, was a wonderful place—but still, Peebles for pleesure!' and this has often been cited as a ludicrous example of rustic prejudice and narrowness of judgment. But, on a fair interpretation of the old gentleman's words, he was not quite so benighted as at first appears. The 'pleesures' of Peebles were the beauties of the situation and the opportunities of healthful recreation it afforded, and these were certainly considerable.

"There was an old and a new town in Peebles—each of them a single street, or little more; and as even the new town had an antique look, it may be inferred that the old looked old indeed. It was indeed chiefly composed of thatched cottages, occupied by weavers and laboring people—a primitive race of homely aspect, in many instances eking out a scanty subsistence by having a cow on the town common, or cultivating a *rig* of potatoes in the fields close to the town. Rows of porridge *luggies* (small wooden vessels) were to be seen cooling on window-soles; a smell of peat smoke pervaded the place; the click of the shuttle was every-where heard during the day; and in the evening, the gray old men came out in their Kilmarnock night-caps, and talked of Bonaparte, on the stone seats beside their doors. The platters used in these humble dwellings were all of wood, and the spoons of horn; knives and forks rather rare articles. The house was generally divided into two apartments by a couple of *box-beds*, placed end to end—a bad style of bed prevalent in cottages all over Scotland; they were so close as almost to stifle the inmates. Among these humble people, all costumes, customs, and ways of living smacked of old times. You would see a venerable patriarch making his way to church on Sunday, with a long-backed, swing-tailed, light-blue coat of the style of George II, which was probably his marriage coat, and half a century old. His head-gear was a broad-brimmed blue bonnet. The old women came out on the same occasions in red scarfs, called cardinals, and white *mutches* (caps), bound by a black ribbon, with the gray hair folded back on the forehead. There was a great deal of drugget, and huckaback, and serge in that old world, and very little cotton. One almost might think he saw the humbler Scotch people of the seventeenth century before his eyes.

"Apropos of the box-beds, there was a carrier named Davie Loch, who was reputed to be rather light of wits, but at the same time not without a sense of his worldly interests. His mother, finding her end approaching, addressed her son, in the presence of a number of the neighbors:

"'The house will be Davie's, of course, and the furniture too.'

"'Eh, hear her!' quoth Davie; 'sensible to the last, sensible to the last.'

"'The lyin' siller'—

"'Eh, yes; how clear she is about every thing!'

"'The lyin' siller is to be divided between my two daughters'—

"'Steek the bed-doors, steek the bed-doors,' interposed Davie; 'she's raving now!' And the old dying woman was shut up accordingly.

"In this old-town population, there survived two or three aged persons who professed an adherence to the Covenant and covenanted work of Reformation. One of these, designated Laird Baird, remains clearly daguerreotyped on my memory,—a tall, bony, grim old man, with blue *rig-and-fur* stockings rolled half-way up his thighs, and a very umbrageous blue bonnet. His secular business consisted in thatching houses; his inner life was a constant brooding over the sins of a perjured and sinful nation, and the various turns of public affairs, in which he traced the punishments inflicted upon us by an outraged Deity, for our laying aside the Solemn League and Covenant. He came up to my mother one summer evening, as she was standing at her door with her first-born in her arms. 'Ye're mickle pleased wi' that bairn, woman,' said the laird gruffly. 'If the French come, what will ye do wi' him? I trow ye'll be fleeing wi' him to the tap o' the Pentland Hills. But ye should rather pray that they *may* come. Ye should pray for judgments, woman,—judgments on a sinfu' land. Pray that the Lord may pour out the vials of his wrath upon us,—it would be for our guid.' And then he went on his way, leaving the pretty young mother heart-chilled by his terrible words. Having known something of old-town worthies of this kind, there was no novelty or surprise to me, a few years thereafter, when I read of Habakkuk Mucklewrath in Scott's 'Old Mortality.'

"I had reason to know the old town in my earliest years, for our family then dwelt in it, though in a modern-slated house, which my father had had built for him by his father when about to be married. Our ancestors had been woolen manufacturers, substantial and respectable people, although living in a very plain style. My father growing up at the time when the cotton manufacture was introduced into Glasgow, had there studied it, and now conducted it on a pretty extensive scale at Peebles, having sometimes as many as a hundred looms in his employment. My earliest recollections bring before me a neat, small mansion, fronting to the Eddleston Water; a tastefully furnished sitting-room, containing a concealed bed, one or two other

little rooms and a kitchen, a ground-floor full of looms, and a garret full of webs and weft. Games at marbles played with my elder brother on the figures of the parlor carpet, when recovering from an illness, come back upon me as among the pleasantest things I have experienced in life; or wandering into the workshop below; it was a great entertainment to sit beside one of the weavers, and watch the movements of the heddles and treadles, and hear the songs and the gossip of the man. Weavers were topping operatives in those days, for they could realize two pounds a week, sometimes even more, and many young men of good connections had joined the trade. My father, as agent for Mr. Henry Monteith, for Mr. McIlroy, and others, in Glasgow, realized a good income, which enabled him to live on an equality with the best families of the place.

"To a child, of course, all things were new, and the first occurrence of any thing to his awakened senses, never fails to make a deep impression. I think I yet remember the first time I observingly saw the swelling green hills around our little town. I am sure I could point to within ten yards of the spot where I saw the first gowan and the first buttercup; first heard the hum of the mountain bee; first looked with wonder into a hedge-sparrow's nest, with its curious treasure of blue eggs. A radius of half a mile would have described the entire world of my infancy; of that world every minute feature remains deeply stamped within me, and will while life and consciousness endure. There is a great deal of studious observation in a child. Casual, trivial, and thoughtless words spoken by his seniors in his presence go into him, to be afterwards estimated and judged of; so it is a great mistake to speak indecorously before children.

"At the time when I was coming upon the stage of the world, a number of old things were going out of it. The Rev. Dr. Dalgliesh, the minister of the parish, still wore a cocked hat. He died in 1808; and I can just remember seeing him one Sunday, as he walked home from church, with that head-gear crowning his tall and dignified figure. There were still a few men with pigtails whisking constantly over the collars of their coats. Spencers still lingered in use. Boots, formerly used only in riding and traveling, were also in vogue with men who desired to be smartly dressed. One could either have *top-boots*, that is, boots with a movable cinture of pale leather at top, or *tassel-boots*, by which was meant what were afterwards called Hessians, terminating in a wavy line under the knee, with a tassel hanging out over the middle in front. A buckish weaver, called Willie Paterson, had got a pair of tassel boots, on which he could fasten tops, and thus enjoy tops or tassels at his pleasure. People meeting him when he went to church would say: 'Willie, I see this is top-day with you.' Top-day or tassel-day for Willie Paterson's boots was a favorite joke. As an alternative for boots were gaiters to the knee, originally tight, but latterly lax, with vertical foldings.

"'Lax in their gaiters, laxer in their gait,'

is a line in the 'Rejected Addresses,' which strongly recalls to me the year 1812.

"The new town was a smarter place than the old; yet it contained many homely old thatched houses, and few of any elegance. The shops were for the most part confined and choky places, with what were called half-doors, a bell being generally rung by customers to summon the worthy trader. The shop of the candle-maker was provided with a bell-pull consisting of an old key dangling at the end of a cord, which was put in requisition to summon 'Candle Nell,' as the female in charge of the establishment was familiarly called. No attempt was made to keep up an appearance of business. All was quiet and sombre by day, and in the evenings a dim candle on the counter made the only difference. A favorite position of the shop-keeper was to lean on his arms over the half-door, gazing abroad into the vacant street, or chatting with a casual bystander. I do not think there were more than three traders in the town who had any apprentice or hired assistant. If the husband was out for a forenoon's fishing in the Tweed, his wife was his sufficient lieutenant. It seems to me remarkable that small as the concerns generally were, the family life of these people was of a somewhat refined character. The tone of the females was far from being vulgar. Accomplishments, such as are now so common, were unknown; but all had a good education in English, and their conversation was not deficient in intelligence."

Considering how little business was done, and also the easy way in which things were conducted, one would scarcely be prepared for the genteel interior of many of the dwellings, or for the tasteful dresses and courteous manners of the wives of the tradesmen. Though a trifle too obese, Candle Nell herself, when the shop was shut, could receive company in style, and, addressed in her proper name, do the honors of her brother's household. A considerable number of persons, as has been said, kept a cow. The going forth of the town cows to their pasturage on a neighboring hill, and their return, constituted leading events of the day. Early in the summer mornings the inhabitants were roused by inharmonious sounds blown from an ox-horn by the town-herd, who leisurely perambulated the streets with a gray plaid twisted around his shoulders. Then came forth the cows, deliberately, one by one, from their respective quarters, and took their way instinctively by the bridge across the Tweed, their keeper coming up behind to urge forward the loiterers. Before taking the ascent to the hill, the cows, in picturesque groups, might have been seen standing within the margin of the Minister's Pool, a smooth part of the river, which reflected on its glistening surface the figures of the animals in various attiudes, along with the surrounding scenery; the whole—river, cows, and trees—forming a tableaux such as would have been a study for Berghem or Wouvermans.

There was much pleasant intercourse among families at a small cost. Scarcely any gave ceremonious dinners. Invitations to tea at six o'clock were common. After tea there were songs, with perhaps a round of Scottish proverbs—a class of sayings which, from their agreeable tartness, found scope for exercise in ordinary transactions, and were more especially useful in snubbing children, and keeping them in remembrance of their duty. The Peebles people were not behind their neighbors in the art of applying these maxims. As, for example, if a fastidious youth presumed to complain that his porridge was not altogether to his mind, he would have for reply, "Lay your wame to your winnin';" that is, "Suit your stomach to your earnings,"—a staple observation in all such cases. Or, if one of unsettled habits got into a scrape, such as "slumping" in the ice, and coming home half-drowned, instead of being commisserated, he would be coolly reminded that "An unhappy fish gets an unhappy bait." Or, if one hinted that he was hungry, and would not be the worse of something to eat, he would, if the application was inopportune, be favored with the advice in dietetics, "You'll be the better o' findin' the grunds o' your stamick." Or, if he, on the other hand, asked for a drink of water shortly after dinner, he would be told that "Mickle meat taks mickle weet;" by which wholesome rebuke he was instructed in the excellent virtue of moderation in eating. Or, if one, when put to some kind of difficult task, said he wanted assistance, he would get the proverb pitched at him, "Help yoursel', and your friends will like you the better." Or, when a family of children quarreled among themselves, and appealed to their mother for an edict of pacification, she would console them with the remark, "You'll all agree better when ye gang in at different kirk doors." A capital thing were these proverbs and sayings for stamping out what were called notions of "uppishness" in children, or hopes of having every thing their own way.

It must not, however, be inferred, from a proficiency in hurling these repressive maxims, that there was any actual deficiency in the affections. Along with a singular absence of demonstrativeness, there was often a spirit of true kindness. At that period, and till comparatively recent times, there was no demoralizing poor-law, such as now exists, to steal the hearts of the people, and create paupers by wholesale. Those in easy circumstances helped, and gave some little personal attention to, their poorer neighbors; and I can remember that, on the occasion of a sudden death by a distressing accident in the family of a laboring man, the feelings of the whole community were munificently stirred up in compassion.

The country was still haunted by medicants of various orders, including old decrepit women, who were carried about on hand-barrows from door to door, begging meal or half-pence. The town, also, was never without two or three natural idiots, generally harmless in character. The most interesting and amusing of these was Daft

Jock Grey—or, to give him his proper title, "Daft Jock Grey of Gilmanscleugh,"—a wanderer through Roxburgh, Selkirk, and Peebles shires, who was known to Sir Walter Scott, and possessed qualities not unlike those assigned to the character of Davie Gellatley. Jock was a kind of genius, had a great command of songs, and composed a ballad, which, commencing with an allusion to his own infirmity, recited, in jingling rhymes, the names and qualities of a number of persons whose houses he frequented in his extensive rambles. It may be amusing to read this curious jingle of names and places, which, as far as I remember, ran as follows, though it is proper to mention that Jock seldom sang it twice the same way—sometimes throwing in a new verse, or leaving out an old one:

DAFT JOCK GREY'S SONG.

"There's Daft Jock Grey o' Gilmanscleugh,
And Davie o' the Inch,
And when ye come to Singley,
They'll help ye in a pinch.
And the laddie he's but young,
And the laddie he's but young,
And Robbie Scott ca's up the rear,
And Caleb beats the drum.*

"There are the Taits o' Caberston,
The Taits o' Holylee,
The ladies o' the Juniper Bank,†
They carry a' the gree.
And the laddie he's but young, etc.

"There's Lockie o' the Skirty Knows,
There's Nicol o' Dick-neuk,
And Bryston o' the Priestrig,
And Hall into the Heap.
And the laddie he's but young, etc.

"The three Scott's o' Commonside,
The Tamson's o' the Mill,
There's Ogilvy o' Branxholm,
And Scoon o' Todgiehill.
And the laddie he's but young, etc.

"The braw lads o' Fawdonside,
The lasses o' the Peel,
And when ye gang to Firnielee,
Ye'll ca' at Ashestiel.‡
And the laddie he's but young, etc.

* Caleb Rutherford, town-drummer of Hawick.

† The Misses Thorburn. Mr. Thorburn, farmer at Juniper Bank, is reputed to have had some characteristics of Dandie Dinmont.

‡ At Ashestiel, Ettrick Forrest, Sir Walter Scott resided with his family for several years prior to 1810; from this place he dates some of his beautiful introductions to the different cantos of *Marmion*.

"There's Lord Napier o' the Lodge,
And Gawin in the Hall,
And Mr. Charters o' Wilton Manse,
Preaches lectures to us all.
And the laddie he's but young, etc.

"There are three wives in Hassendean,
And ane in Braddie-Yards,
And they're away to Gittenscleugh,
And left their wheel and cards.*
And the laddie he's but young, etc.

"There's Bailie Nixon, merchant,†
The Miss Moncrieffs and a',
And if ye gang some farther east,
You'll come to Willie Ha'.
And the laddie he's but young,
And the laddie he's but young,
And Robbie Scott ca's up the rear,
And Caleb beats the drum."

Jock was also a mimic, and as such gave acceptable imitations of the style of preaching of all the ministers in his rounds. Before commencing an imitation, he required to have an apron thrown over his head, and thus he stood, like a veiled prophet, for a few moments, as if recalling the appropriate inspiration. Attempts had been made to get him to attend to regular labor, but without effect. The minister of Selkirk on one occasion addressed him somewhat pompously: "John, you are an idle fellow; why don't you work? You could at least herd a few cows."

"Me herd!" replied Jock; "I dinna ken corn frae gress." That answer settled the minister.

Hogmanay, the last day of the year,‡ was the grand festival of all varieties of mendicants, daft folk, and children generally; for there was a universal distribution of oat-cakes, cheese, short bread, and buns at the doors of the inhabitants. Among those who secured a respectable dole on such occasions was the town-piper, dressed in a red uniform and cocked hat, as befitted a civic official. Piper Ritchie, for such was his name, enjoyed a munificent salary of a pound a year from the corporation, along with a pair of shoes; and it was understood that, besides his dole at Hogmanay, he was entitled to receive at least a groat annually from all well-disposed householders. His emoluments were completed by certain small fees for playing at

* Hand-cards for carding wool.

† In Hawick.

‡ The origin of the word Hogmanay has been very puzzling. None of the ordinary explanations is worth any thing. I venture to suggest that it is a familiar corruption from an old cry in French: *Aux gueux mener* (bring to the beggars.) The calling out of the word at doors by children and mendicants is in this view quite appropriate.

weddings. In escorting a marriage-party, he marched with becoming importance in front, playing with might and main a tune called "Welcome Hame, my Dearie,"—which air I would be glad to recover.

On Hogmanay Day, tradesmen called personally with their yearly accounts, of which they received payment along with some appropriate refreshment. There was *first-footing* on New Year's morning. And Handsel Monday—the first Monday in the year—was marked by tossing a profusion of ballads and penny chap-books from windows among a crowd of clamorous youngsters. New Year was also signalized by various domestic festivities. The severity of manners of a hundred years earlier had worn off. There was unrebuked joviality at births and marriages, and even in a solemn way at deaths. In the house of the deceased, on the morning before the funeral, there was a Lyke-wake, consisting of a succession of services of refreshments, presided over by an undertaker, one of whose professional recommendations consisted in saying a fresh grace to each batch of mourners. Laird Grieve, an aged and facetious carpenter, carried off the chief business in coffin-making, in consequence of being able to say seven graces of considerable length without repetition. The consumption of whisky at these lugubrious entertainments was incredible, and sometimes encroached seriously on the means of families. After the funeral, there was an entertainment called the Dredgy, which was a degree more cheerful than the preceding potations.

Although the belief in witchcraft had died out generally, it was still entertained in a limited way by the less enlightened classes. I have a recollection of a poor old woman being reputed as a witch, and that it was not safe to pass her cottage, without placing the thumb across the fourth finger, so as to form the figure of the cross. This species of exorcism I practiced under instructions from boys older than myself. I likewise remember seeing salt thrown on the fire, as a guard against the evil eye, when aged women, suspected of not being quite *canny*, happened to call at a neighbor's dwelling. The aged postman, as was confidently reported, never went on his rounds with the letters without a sprig of rowan-tree (mountain ash) in his pocket, as a preservative against malevolent influences. There was no police. Offenders against the law were usually captured by a town-officer, at the verbal command of the provost, who administered justice in an off-hand way behind his counter, amidst miscellaneous dealings with customers, and ordered off alleged delinquents to prison without keeping any record of the transaction. Dismission from confinement took place in the like abrupt and arbitrary manner.

As will be observed, there was still much of an old-world air about Peebles. The transit to and from it was tedious and expensive. In winter there was a dearth of fuel, causing the poorer classes to rely for warmth on that species of deposit from cows, mixed with coal-

culm and baked in the sun, which we learn from the Malmesbury Papers was used as fuel in Cambridgeshire after the middle of last century. Although the town had existed for a thousand years or more, it possessed no printing-press. Only two or three newspapers came to it in the course of a week, and these were handed about till they were in tatters. Advertisements were made by tuck of drum; the official employed for the purpose being an old soldier, a tough little man with a queue, known as "Drummer Will." It was told of him that he had gallantly beat a drum at the battle of Quebec until the whole regiment had perished, he alone being the survivor, and still vigorously beating his drum like a hero amidst fire and shot. Now settled down as an officer of the civic corporation, Drummer Will usefully performed the triple duty of acting as jailer, constable, and agent for advertisements, which, after collecting an audience, he read by means of a pair of Dutch spectacles, and always pronounced *adverteesements*.

Robert describes the way the more affluent burghers often spent their evenings:

"The absence of excitement in the ordinary life of a small town, made it next to impossible for a man of social spirit to avoid convivial evening meetings, and these were frequent. The favorite *howff* was an old-fashioned inn kept by a certain Miss Ritchie, a clever, sprightly woman of irreproachable character, who, so far from the obsequiousness of her profession, required to be treated by her guests with no small amount of deference, and, in especial, would never allow them to have liquor after a decent hour. When that hour arrived — I think it was the Forbes-Mackenzie hour of eleven — it was vain for them to ask a fresh supply. 'Na, na; gang hame to your wives and bairns,' was her dictum, and it was impossible for them to sit much longer. 'Meg Dods,' in 'St. Ronan's Well,' is what I would call a rough and strong portraiture of Miss Ritchie, a Miss Ritchie of a lower sphere of life; and if I may judge from a conversation I once had with Sir Walter Scott regarding the supposed prototype, I think he knew little about her. The *tout-ensemble* of the actual inn—a laird's town-house of the seventeenth century, with a *grande cour* in front, accessible by an arched gate surmounted by a dial—with the little low-ceiled rooms and Miss Ritchie herself ruling house, and servants, and guests with her clear head and ready tongue, jocosely sharp with every body, forms a picture in my mind to which I should now vainly seek to find a parallel.

"Into one of Miss Ritchie's parlors, or some similar place, would little groups of the burghers converge every evening after the shutting up of their shops, there to talk over the last public news, or any petty occurrence that might have taken place nearer home. There was hardly any declared liberalism among them, for the exigencies of the country, under the great struggle with Bonaparte, had extinguished nearly all differences of opinion. Dear to man is the face of his

brother man; pleasant it is every where to hear that brother man's voice, and have an interchange of ideas with him. In that lifeless little town, to have denied the inhabitants these social meetings would have been to practice the greatest cruelty; and on a liberal view, admitting that the means of a more legitimate excitement were not to be had, the jug of whisky-toddy at Miss Ritchie's in the evening puts on a defensible aspect. Toddy might there be regarded as the very cement of society, an attraction of cohesion, without which a small country town would have been pulverized and dispersed into space. I suppose the same end was served in former times by two-penny ale, a liquor of which only the fame remained in my youthful days; but since the middle of the eighteenth century, usquebaugh had been coming into general use, and a hot solution of it with sugar, under a name introduced (strange to say) from the East Indies, namely, toddy, was already universal. The decoction was made in stone-ware quart jugs, and poured into the glasses of the company, again and again, in successive rounds, as soon as each person had drained off what was before him; those who lagged in their potations being always duly prompted and pushed on by their neighbors. They always met under the belief that they were going to have just one jug; but somehow, when that was ended, there was always a painful feeling of surprise, and to have a second seemed only a doing of justice to themselves, under an unaccountable wrong continually inflicted upon them by the nature of things. Matters being so far righted, they might have been expected to see the propriety of going home to their beds; but here came in a local circumstance which interested them to an opposite conclusion. The burgh happened to have a most bibulous coat armorial, consisting of three fishes (by the way, I suspect that fishes drink no more than land animals do, though the contrary is always supposed); and so, when the second jug was emptied, some one was sure to mention 'Peebles Arms,' thereby hinting the duty they were under, in loyalty to the town, to have a third jug. Such an argument in such circumstances was irresistible; and thus it came about that the one virtuous jug of the intention always proved to be three in the guilty event.

"Our neighbor, Laird Grieve, the aged joiner and undertaker, had a son 'Tam,' who succeeded to his business. Tam was a blithe, hearty man, with an old-fashioned gentility in his aspect, and was a general favorite in the town, which he served for many years in the capacity of a bailie. He had a small carpenter's shop, and a saw-pit, and an appearance of uncut logs about his premises; but I never could connect the idea of either work or business with Bailie Grieve. He continued, however, all through life to have a kind of eminence as a maker of fishing-rods. He was also an excellent angler, in which capacity he was well known to the late Professor Wilson.

"It used to be very pleasant, in returning to Peebles as a visitor, to call upon Tam at his neat, small, white house, near the bottom of

the old town, where, in a miniature terraced garden with a neat white railing, I saw tulips for the first time, and thought them the prettiest objects in creation. Being a widower and without children, the bailie had an old woman, Bet, for a general servant and housekeeper; and her reception of us, as she opened the door, and showed us into her master's little, low-ceiled parlor, was always of an enthusiastic character. Presently there would be a gust of kindly and somewhat vociferous talk, Bet standing within the door (but holding it by the handle) all the time, and lending in her word whenever she had occasion. Dear traits of the old simple world, how delightful to recall you in these scenes of comparative refinement and comparative stiffness and frigidity!"

Among that considerable part of the population who lived down closes and in old thatched cottages, news circulated at third or fourth hand, or was merged in conversation on religious or other topics. My brother and I derived much enjoyment, not to say instruction, from the singing of old ballads, and the telling of legendary stories, by a kind old female relative, the wife of a decayed tradesman, who dwelt in one of the ancient closes. At her humble fireside, under the canopy of a huge chimney, where her half-blind and superannuated husband sat dozing in a chair, the battle of Corunna and other prevailing news was strangely mingled with disquisitions on the Jewish wars. The source of this interesting conversation was a well-worn copy of L'Estrange's translation of "Josephus," a small folio of date 1720. The envied possessor of the work was Tam Fleck, "a flichty chield," as he was considered, who, not particularly steady at his legitimate employment, struck out a sort of profession by going about in the evenings with his "Josephus," which he read as the current news; the only light he had for doing so being usually that imparted by the flickering blaze of a piece of parrot coal. It was his practice not to read more than from two to three pages at a time, interlarded with sagacious remarks of his own by way of foot-notes, and in this way he sustained an extraordinary interest in the narrative. Retailing the matter with great equability in different households, Tam kept all at the same point of information, and wound them up with a corresponding anxiety as to the issue of some moving event in Hebrew annals. Although in this way he went through a course of "Josephus" yearly, the novelty somehow never seemed to wear off.

"Weel, Tam, what's the news the nicht?" would old Geordie Murry say, as Tam entered with his "Josephus" under his arm, and seated himself at the family fireside.

"Bad news, bad news," replied Tam. "Titus has begun to besiege Jerusalem; it's gaun to be a terrible business;" and then he opened his budget of intelligence, to which all paid the most reverential attention. The protracted and severe famine which was endured by the besieged Jews was a theme which kept several families

in a state of agony for a week; and when Tam in his readings came to the final conflict and destruction of the city by the Roman general, there was a perfect paroxysm of horror. At such *séances* my brother and I were delighted listeners. All honor to the memory of Tam Fleck.

In the old-town community, where he often figured, our more immediate paternal ancestors, as enjoying the fruits of uninterrupted frugality and industry for centuries, had attained to a somewhat enviable position. My grandfather, William Chambers, continuing the occupation of his predecessors, carried on the manufacture of woolen and linen cloths, on what would now be called an antiquated and meager scale, in a long, thatched building at the corner of a quadrangle which in old times had formed the market-place of the town. One end of this homely structure was his dwelling, consisting of two apartments; and in the other were several hand-looms and warping machines. All the family labored according to their ability, and the whole arrangements were of a thrifty kind, not absolutely enjoined by the pressure of daily wants, but conformable to the ordinary usages of the period.

The whole establishment might be taken as a type of a state of society once common in the smaller provincial towns of Scotland; and contrasting it with the present state of things, we may observe the remarkable advances which have been made in the country since the latter part of the eighteenth century. Here was a man of some consideration—an independent manufacturer, so to speak—and in no respect penurious, living in a style inferior to that of any mechanic in the present day with a wage of only twenty shillings a week. No elegances, nor what we now deem indispensable comforts. When people are inclined to grumble with their accommodations, and to speak of the dearth of luxuries, would it not be well for them, in however small a degree, to compare their condition with that of their grandfathers three-quarters of a century ago?

Upright, pious, and benevolent, my grandfather very acceptably held the office of an elder of the church for the last thirty years of his existence. To the poor and wretched he was an ever ready friend, adviser, and consoler. I have heard it related that on Sunday evenings he would return exhausted with his religious peregrinations and exercises, having, in the course of a few hours, visited perhaps as many as a dozen sick or dying persons, and offered up an extempore and suitable prayer with each. At his death, in 1799, this worthy man left his widow and second son, William, to carry on the business, my father James, the elder son, having about the same period begun his cotton manufacturing concern.

Of this widow, my grandmother, I retain some recollections. According to an old custom in Scotland, she was, though married, known only by her maiden name, which was Margaret Kerr. Margaret was a little woman, of plain appearance, a great stickler on

points of controversial divinity, a rigorous critic of sermons, and a severe censor of what she considered degenerating manners. She possessed a good deal of "character," and might almost be taken for the original of Mause Headrigg. As the wife of a ruling elder, she possibly imagined that she was entitled to exercise a certain authority in ecclesiastical matters. An anecdote is told of her having once taken the venerable Dr. Dalgliesh, the parish minister, through hands. In presence of a number of neighbors, she thought fit to lecture him on that particularly delicate subject, his wife's dress: "It was a sin and a shame to see sae mickle finery."

The minister did not deny the charge, but dexterously encountered her with the Socratic method of argument: "So, Margaret, you think that ornament is useless and sinful in a lady's dress?"

"Certainly I do."

"Then may I ask why you wear that ribbon around your cap? A piece of cord would surely do quite as well."

Disconcerted with this unforeseen turn of affairs, Margaret determinedly rejoined in an undertone: "Ye'll no hae lang to speer sic a like question."

Next day her cap was bound with a piece of white tape; and never afterwards, till the day of her death, did she wear a ribbon, or any morsel of ornament. I am doubtful if we could match this out of Scotland. For a novelist to depict characters of this kind, he would require to see them in real life; no imagination could reach them. Sir Walter Scott both saw and talked with them, for they were not extinct in his day.

The mortifying rebuff about the ribbon, perhaps, had some influence in making my ancestress a Seceder. As she lived near the manse, I am afraid she must have been a good deal of a thorn in the side of a parish minister, notwithstanding all the palliatives of her good-natured husband, the elder. At length an incident occurred, which sent her abruptly off to a recently erected meeting-house, to which a promising young preacher, Mr. Leckie, had been appointed.

It was a bright summer morning about five o'clock, when Margaret left her husband's side as usual, and went out to see her cow attended to. Before three minutes had elapsed, her husband was aroused by her coming in with dismal cries: "Eh, sirs! eh, sirs! did I ever think to live to see the day? O man, O man, O William, this is a terrible thing indeed! Could I ever have thought to see't?"

"Gracious, woman!" exclaimed the worthy elder, by this time fully awake, "what is't? Is the coo deid?" for it seemed to him that no greater calamity could have been expected to produce such doleful exclamations.

"The coo deid!" responded Margaret: "waur, waur, ten times waur. There's Dr. Dalgliesh only now gaun hame at five o'clock in the morning. It's aufu', it's aufu'! What will things come to?"

The elder, though a pattern of propriety himself, is not recorded

as having taken any but a mild view of the minister's conduct, more particularly as he knew that the patron of the parish was at Miss Ritchie's inn, and that the reverend divine might have been detained rather late with him against his will. The strenuous Margaret drew no such charitable conclusions. She joined the Secession congregation next day, and never again attended the parish church.

EARLY YEARS CONTINUED—1800 TO 1813.

Before introducing my mother to the modest mansion, the first home of her married life, situated on the north bank of the Eddleston Water, a small tributary of the Tweed, something characteristic of old Scotland may be said of her parentage: and here we return to Robert's manuscript.

"In the middle of the last century, the farm of Jedderfield, situated on the hill-face above Neidpath Castle, a mile from Peebles, the property of the Earl of March, was occupied, at the rent of eighteen pounds, by an honest man named David Grieve. While the noble proprietor was pursuing his career of sport and debauchery in London—the course which was consummated by him many years after, under the title which he finally acquired of Duke of Queensberry (familiarly *Old Q.*),—the tenant, David Grieve, reared on that small bit of his lordship's domains a family of fourteen children, most of whom floated on by their own merits to much superior positions in life: one to be a merchant in Manchester, two to similar positions in Edinburgh, one to be a surgeon in the East India Company's service, and so forth. This family afforded an example of the virtuous, frugal life of the rural people of Scotland previous to that extension of industry which brought wealth and many comforts into our country. The breakfast was oatmeal porridge; the supper, a thinner farinaceous composition named sowens; for the dinner, there was seldom butcher-meat: the ordinary mess was a thin broth called *Lenten keil*, composed of a ball of oat-meal kneaded up with butter, boiled in an infusion of cabbage, and eaten with barley or pease meal bannocks. Strange as it may seem, a people of many fine qualities were reared in this plain style, a people of bone and muscle, mentally as well as physically—'buirdly chiels and clever hizzies,' as Burns says. There was not a particle of luxury in that Sabine life; hardly a single article of the kind sold in shops was used. The food was all obtained from the farm, and the clothing was wholly of homespun. I can not be under any mistake about it, for I have often heard the household and its ways described by my maternal grandmother, who was David Grieve's eldest daughter. Even the education of the children was conducted at home, the mother giving them lessons while seated at her spinning-wheel.

"Janet, the eldest girl, was wedded at eighteen by a middle-aged

farmer, named William Gibson, who rented a large tract of pasturage belonging to Dr. Hay, of Haystoun. This farm, called Newby, was not less than seven miles long; it commenced near Haystoun, about two miles from Peebles, and at the other extremity bordered on Blackhouse, in Selkirkshire, where the Ettrick Shepherd spent his youthful days. The Gibsons were a numerous clan in Tweeddale, and some of them, including the tenant of Newby, were comparatively wealthy. William Gibson had never less than a hundred score of sheep on his farm, and such was the abundance of ewe-milk, that, for a part of the year, his wife made a cheese of that material every day." The ewes were milked early in the morning by lassies, who for this purpose trooped off with bowies, or pails, on their heads from the homestead to sheep-pens among the hills,—a fashion of rural life commemorated in the songs of Ramsey and other Scottish poets:

> "I've heard the liltin' at the ewe milkin',
> Lasses a-liltin' before dawn of day;
> Now there's a moanin' on ilka green loanin'—
> The Flowers of the Forest are a' wede away."

In marrying William Gibson, the reputedly rich farmer of Newby, Janet Grieve was thought to make an enviable match, and of this there was some outward tokens. The marriage took place in 1768. On the day preceding the event, Janet's "providing," which was sumptuous, was dispatched in a cart from Jedderfield to what was to be her new home; the load of various articles being conspicuously surmounted by a spinning-wheel, decorated with ribbons of different colors. The marriage was signalized by more than the customary festivities, in the midst of which the young and blooming bride was placed behind her husband on horseback; and thus, after pacing grandly through Peebles with a following of rustic cavaliers, the wedded pair arrived at Newby. In the present day, we should in vain look for this old farm-establishment, for every vestige of it is gone; and we only discover the spot, which is the edge of a gowany bank overhanging Haystoun Burn, by a decayed tree that flourished in the corner of the small garden.

"There was a much less frugal style of life at Newby than at Jedderfield. Although the homestead consisted of only a cottage, containing *a but and a ben*, that is, a kitchen and parlor, with the usual appendages of a barn, etc., it gave shelter every night to groups of the vagrant people, the multitude of whom was a matter of remark and lamentation a few years before to Fletcher, of Salton, and other patriots. On a Saturday night there would be as many as twenty of these poor creatures received by the farmer for food and lodging till Monday morning. Some of them, who had established a good character, were entertained in the farmer's *ha'*, where himself, his wife, and servants ordinarily sat, as was the fashion of that time. The family rather relished this society, for from hardly any other source did they ever

obtain any of the news of the country. One well-remembered guest of this order was a robust old man named Andrew Gemmells, who had been a dragoon in his youth, but had long assumed the blue gown and badge of a *king's bedesman*, or licensed beggar, together with the meal-pocks and long staff. A rough and ready tongue, and a picturesque if not venerable aspect, had recommended Andrew in many households superior to my grandfather's.

"Sir Walter Scott, who commemorates him under the name of Edie Ochiltree, tells how a laird was found one day playing at draughts with Gemmells, the only mark of distinction of rank presented in the case being that the laird sat in his parlor, and the *blue-gown* in the court outside, the board being placed on the sill of the open window between. I can corroborate the view which we thus acquire of the old beggar's position, by stating that the guidwife of Newby learned the game of draughts—commonly called in Scotland the *dam-brod*—from Andrew Gemmells, and often played with him at her hall fireside. Somewhat to his disgust, the pupil became in time the equal of the master, and a visitor one day backed her against him for a guinea, which the old man did not scruple to stake, and which he could easily have paid if unsuccessful, as he carried a good deal of money about his person. When it appeared, however, that she was about to gain the game, Andrew lost his temper, or affected to do so, and, hastily snatching up the board, threw the 'men' into the ash-pit. Andrew circulated all through the counties of Peebles, Selkirk, and Roxburgh, going from house to house, and getting an *awmos* (alms), with lodging if necessary, at each, appreciated as an original wherever he came—every-where civilly and even kindly treated. It must have been, on the whole, a pleasant life for the old man, but one that could only be so while the primitive simple style of farm-life subsisted, that is, while the farmer, his wife, and children, still herded in the same room with their servants, and were not above holding converse with the remembered beggar. Perhaps poor Andrew found at last that things were taking an unfavorable turn for him, for he died in an *outhouse* at a farm in the parish of Roxburgh, in the month of February too (1794).

"My grandmother was wedded, and went home to her husband's house at Newby, in 1768. She was a remarkably good looking, portly woman, bearing a considerable resemblance to a profile portrait of Madame Roland, the famous heroine of the French Revolution. The 'leddies' of Haystoun, sisters and daughters of the landlord, Dr. Hay, felt an interest in the pretty young wife, and put themselves on familiar terms with her. They would send a message to her on Saturday, asking if she designed to go to church at Peebles next day, and if so, making an appointment with her to join their party. The five or six 'leddies,' and the young guidwife of Newby, might have been seen next morning picking their steps along the road to Peebles, each wearing her pretty checked plaid or mantilla over her head, such

being the old Scottish succedaneum for a bonnet. A most interesting group it must have been, for the Hays were all handsome people, and the young guidwife was reckoned the bonniest woman in Peeblesshire in her day. A lively gossiping conversation was kept up. The 'leddies' would be telling their young rustic friend of the assemblies they had been attending in Edinburgh, where Miss Nicky Murray (sister of the Chief-justice Earl of Mansfield) was in the height of her authority; the guidwife probably telling them in turn of the results of the lambing season, or some bit of country news.

"In the second year of my grandmother's married life, one of her Haystoun friends, the daughter of Dr. Hay, was married, and taken to a permanent residence in Edinburgh, by Sir Wm. Forbes, the banker, a man who enjoyed as much of the public esteem in Scotland as any man living during his time, whose memory has been embalmed in the verse of Scott, and whose autobiography I had much pleasure in editing a few years ago, through the impression made upon me regarding him by my grandmother's recollections. Two unmarried Misses Hay, who survived to an extreme old age, always kept up their intimacy with my grandmother, and I remember 'Miss Ailie' calling upon her in Edinburgh about 1855. Miss Ailie was understood to be above ninety at that time, but she never seemed to admit or acknowledge the progress of time, and time really seemed to have very little to do with her. A question about somebody's age arose, and I recollect the old lady saying, rather snappishly, and with the air of one whose words admitted of no reply: 'As to age, it's a subject that was never mentioned in my father's family.' Misses Ailie and Bettie Hay spent their latter days in a *flat* in West Nicolson street, Edinburgh, and only once during a great number of years revisited the ancient paternal mansion in Peeblesshire. I was at Newby not long after, and heard from the farmer how the old ladies came and wandered about the place, lingering fondly in every romantic nook which they had known in former years, and declaring that they thought they could have recognized the place by the smell of the flowers.

"I feel impelled here to remark the pleasant old-fashion of calling ladies by some familiar form of their Christian name. The world was full of Miss Betties, Miss Peggies, and Miss Beenies, long ago; nay, the daughters of dukes and earls were Lady Madies, Lady Lizzies, and Lady Kates. There was something very endearing in the custom. It brought high and low together on the common ground of family fireside life. Your Miss Elizabeths and Lady Catharines seem a people in a different sphere, beyond the range of our sympathies. I have heard a gentleman say that, in the family of which he was one, all went well while they continued to call each other by the pet names of their nursery days; and that, on a resolution being formed to exchange these for the formal Christian names, there ensued a marked diminution of their mutual affection, and they never

afterwards were the same thing to each other that they had been. This fact seems to me one well worth bearing in mind.

"My grandmother and her maids were generally up at an early hour in the morning to attend to the ewes, and their time for going to rest must have consequently been an early one. There was always, however, a period, called 'between gloaming and supper-time,' during which another industry was practiced. Then it was that the wheels were brought out for the spinning of the yarn which was to constitute the clothing of the family. And I often think that it must have been a pleasing sight in that humble hall—the handsome young mistress amidst her troop of maidens, all busy with foot and finger, while the shepherds and their master, and one or two favored gaberlunzies, would be telling stories or cracking jokes for the general entertainment, or some one with a good voice would be singing the songs of Ramsay and Hamilton. At a certain time of the year, the guidwife had to lay aside the ordinary little wheel, by which lint was spun, and take to the 'muckle wheel,' which was required for the production of woolen thread, the material of the goodman's clothes, or else the 'reel,' on which she reduced the product of the little wheel to hanks for the weaver. Even the Misses Hay were great lint spinners, and I suspect that their familiar acquaintance with the guidwife of Newby depended somewhat on their common devotion to the wheel.

"It was on this farm of Newby, while in the possession of Mr. Gibson, in the year 1772, that there occurred a case of the sagacity of the shepherd's dog, which has often been adverted to in books, but seldom with correctness as to the details. A store-farmer, in another part of the county, had commenced a system of sheep-stealing, which he was believed to have practiced without detection for several years. At length a ewe, which had been taken among other sheep from Newby, reappeared on the farm, bearing a *birn* (Anglicè, brand) on her face in addition to that of her true owner. The animal was believed to have been attracted to her former home by the instinct of affection towards the lamb from whom she had been separated, and her return was the more remarkable as it involved the necessity of her crossing the river Tweed. The shepherd, James Hislop, did not fail to report the reappearance of the ewe to his master, and it was not long before they ascertained whose brand it was which had been impressed over Mr. Gibson's. As many sheep had been for some time missed out of the stock, it was thought proper that Hislop should pay a visit to Mr. Murdison's farm, where he quickly discovered a considerable number of sheep bearing Mr. Gibson's brand O, all having Mr. Murdison's, the letter T, superimposed. In short, Murdison and his shepherd Miller were apprehended, tried, convicted, and duly hanged in the grassmarket—a startling exhibition, considering the position of the sufferers in life, and made the more so by the humbler man choosing to come upon the scaffold in his 'dead-

clothes.' The long-continued success of the crime of these wretched men was found to have depended on the wonderful human-like sense of Miller's dog 'Yarrow.' Accompanied by 'Yarrow,' the man would take an opportunity of visiting a neighboring farm and looking through the flocks. He had there only to point out certain sheep to his sagacious companion, who would come that night, select each animal so pointed out, bring them together, and drive them across the country, and, moreover, across the Tweed, to his master's farm, never once undergoing detection. The story ran that the dog was hanged soon after his master, as being thought a dangerous creature in a country full of flocks; but I would hope that this was a false rumor, and my grandmother, who might have known all the circumstances connected with the case, never affirmed its truth."

About 1780, Mr. Gibson retired with a moderate competency to Peebles, where he concluded his days. Here were born to him a girl and boy, who at his death were left in charge of their mother and several appointed guardians. Unfortunately, as regards these children, their mother made a second marriage with a teacher, Mr. Robert Noble, and in the short space of two or three years she was again left a widow, with an addition of two boys, Robert and David, without any provision whatever from this new connection. To the two young Gibsons, Jean and her brother William, this affair led to much domestic unhappiness, along with a desire to escape from it in the best way possible. Jean grew up an uncommonly beautiful girl, and being in some small degree an heiress, had a number of admirers, one of them being my father, to whom she was married; and the young pair began housekeeping in the neat mansion already described.

This marriage took place in May, 1799. I was born in less than a year afterwards, and, as has been said, Robert was born in 1802. My furthest stretch of memory pictures my mother as a gentle, lady like person, slender in frame, punctiliously tasteful in dress, and beautiful in features, but with an expression of blended pensiveness and cheerfulness indicative of the position into which she had been brought. Even as a child I could see she had sorrows—perhaps regrets. It might have been safe to say that her union had been "ill-fated."

It is not, however, to be assumed from this circumstance that my father was undeserving of regard. He possessed numerous estimable qualities, but, in association with these, a pliancy of disposition which, according to the language of the world, renders a man "his own worst enemy." In my experience in private life, I have never known any one more keenly conscientious in matters concerning others, and less so in things concerning himself. Accurate, upright, aspiring in his tastes and notions, with a fund of humor, and an immense love for music, he may be said to have taken a lead in the town for his general knowledge. He made some progress in scientific attainments.

Affected, like others at the time, with the fascinating works of James Ferguson on astronomy, he had a kind of range for that branch of study, which he pursued, by means of a tolerably good telescope, in company with Mungo Park, the African traveler, who had settled as a surgeon in Peebles, and one or two other acquaintances.

He often lamented that his parents had not followed out a design of bestowing on him a liberal education. Supposing him to have been under some delusion in this respect, it could, I think, have been nothing but a sincere love of literature that induced him to acquire a copy of the "Encyclopædia Britannica," at a time when works of this expensive nature were purchased only by the learned and affluent. The possession of this voluminous mass of knowledge in no small degree helped to create a taste for reading in my own, and more particularly my brother's mind; at all events a familiarity with the volumes of this great work is among the oldest of my recollections. Nor can I omit to mention other agreeable reminiscences of these early days. My father, as an amateur, was an excellent and untiring performer on the German flute, an instrument which shared his affections with his telescope. Seated at the open window of his little parlor in calm summer gloamings, he would play an endless series of Scottish airs, which might be heard along the Eddleston Water; then, as the clear, silvery moon and planets arose to illumine the growing darkness, out would be brought his telescope, which being planted carefully on its stand on my mother's tea-table, there ensued a critical inspection of the firmament and its starry host. From circumstances of this kind, discussions about the satellites of Jupiter and the belts of Saturn are embedded in reminiscences of my early years.

Once or twice a year my father had occasion to go to Glasgow in connection with business arrangements. The journey, upwards of forty miles, was performed on foot, in company with Jamie Hall, a stocking manufacturer, who was an oddity. They were usually two days on the road. Hall made a point of paying his way in pairs of stockings, of which he carried a choice stock on his back, calculated to settle all the reckonings till he arrived at the Spoutmouth in the Gallowgate. In one of these visits to Glasgow, my father, through his love of music, purchased a spinet, which, arriving on the top of the carrier's cart, created some perturbation in the household. It was a heedless acquisition, for there was no place to put it except in the garret, among heaps of warps and bundles of weft. There, accordingly, where there was barely standing-room, the unfortunate spinet was deposited, and became an object of musical indulgence, sometimes for hours, in which enjoyment all sublunary cares were forgot.

With these tastes and accomplishments, it was, as just stated, my father's misfortune to have a remarkable facility of disposition. With a power of penetrating character, and a correct knowledge of physiognomy, he was disqualified to battle with the realities of life through

his guilelessness and goodness of heart. Notwithstanding all his boasted shrewdness, he was constantly exposed to imposition, being cheated, as it were, with his eyes open. Desirous to please, he could not resist importunities to lend money or give credit, though conscious that by doing so he would almost inevitably incur a loss. Yet, with this pliancy, he could fire up on occasions, particularly when his word was doubted, or his principles attacked. Careless of consequences, he avowed his hatred of political subserviency at a time when independent principle, as far as Scotland was concerned, was very nearly trampled out of existence. Henry Cockburn, in his "Memorials," speaks of the deplorable state of things in Edinburgh. In country towns, matters were fully worse. My father's views of public policy were not calculated to make friends in an age of political sycophancy. In 1807, on the occasion of a contested election for a member of parliament for the group of burghs of which Peebles was a member, he was threatened with oppressive measures for simply refusing to advise his brother to vote in a particular manner.

The circumstances of the case were these: My uncle, as a member of the town-council, having at the election stuck to the liberal side along with nine other members,—constituting, as they were called, the steady ten,—my father was earnestly solicited to remonstrate with his brother, and, if possible, induce him to vote for the opposite party. Money had been tendered, a place had been offered, but all would not do. Every overture was rejected. To employ a new kind of persuasive, my father was visited by Mr. C——, of K——, a land proprietor in the neighborhood, who spoke rather freely. My father was unyielding, would have nothing to do with the affair; besides, he thought his brother was in the right. "Well, then," concluded his visitor, "if you are resolved on being obstinate, we know what to do. I think I possess some influence among the manufacturers of Glasgow with whom you are connected, and will get them to remove their commissions; in short, either help us, or lay your account with being ruined." This, of course, was too much for my father's equanimity. Bursting with rage, he ordered the political emissary out of the house, telling him at the same time, that he alike despised and defied him. The menace had been idly made; at least, it came to nothing. I have just a bare recollection of this strange scene, which was called to mind some years ago, when I saw my father's old oppressor walking about Edinburgh, a decayed gentleman, in somewhat melancholy mood, having, from reverses of fortune, been obliged to sell his estate and retire into obscurity. He was undoubtedly a man of amiable character, who, from a too eager spirit of partisanship, had been led to commit a mean and disreputable act, as his threatened attempt to crush my father must be considered to have been. Such is now the improved tone of society and manners, that, in mentioning the above incident, one feels as if digging fossils from the submerged strata of an antediluvian world.

His musical accomplishments rendered my father's society peculiarly attractive. He had a good voice, and sung the Scottish songs with considerable effect; consequently he was much in request at convivialities, to which, from a fondness for lively conversation, he had no particular objection. There, indeed, lay my father's weakness,—too slight a regard for personal responsibilities. His indifference in this respect could not fail to throw additional obligations on my mother, whose destiny it was to confront and overcome innumerable embarrassments. Acquainted with only the elementary branches of education, and unskilled in any fashionable accomplishments, she nevertheless possessed a strong understanding. I might truly say that, both in appearance and manners, she was by nature a lady, and circumstances made her a heroine. Delicate in frame, and with generally poor health, she was ill-adapted for the fatigues and anxieties which she had to encounter; but such was her tact and dexterity, as well as her determined resolution, that she bore and overcame trials which I feel assured would have sunk many in like circumstances to the depths of despair. What she did may afterwards appear. Meanwhile, a number of young children demanded her care.

Robert and I had a strange congenital malformation. We were sent into the world with six fingers on each hand, and six toes on each foot. By the neighbors, as I understand, this was thought particularly lucky; but it proved any thing but lucky for one of us. In my own case, the redundant members were easily removed, leaving scarcely a trace of their presence; but in the case of Robert, the result was very different. The supernumerary toes on the outside of the foot were attached to, or formed part of, the metatarsal bones, and were so badly amputated as to leave delicate protuberances, calculated to be a torment for life. This unfortunate circumstance, by producing a certain degree of lameness and difficulty in walking, no doubt exerted a permanent influence over my brother's habits and feelings. Indisposed to indulge in the boisterous exercise of other boys,—studious, docile in temperament, and excelling in mental qualifications,—he shot ahead of me in all matters of education. Though dissimilar in various ways, we, however, associated together from our earliest years. It almost seemed as if a difference of tastes and aptitudes produced a degree of mutual reliance and co-operation. With a more practical and exigent tone of mind than Robert, I might possibly have made a decent progress at school, had my teachers at all sympathized with me. As it happened, I look back upon my school experiences with any thing but satisfaction. A very few particulars will suffice.

My first school was one kept by a poor old widow, Kirsty Cranston, who, according to her own account, was qualified to carry forward her pupils as far as reading the Bible; but to this proficiency there was the reasonable exception of leaving out difficult words, such as Maher-shalal-hash-baz. These, she told the children, might be made

"a pass-over," and accordingly, it was the rule of the establishment to let them alone. From this humble seminary I was in time transferred to the burgh school, then under the charge of Mr. James Gray, author of a popular treatise on arithmetic. The fee, here, was two shillings and twopence per quarter for reading and writing, and sixpence additional for arithmetic. The pupils were the children of nearly all classes in the town and rural districts around. They numbered about a hundred and fifty boys and girls. Probably a third of them in summer were barefooted, but this was less a necessity than a choice; at any rate, it well suited the locality. In front of the school-house lay the town green, and beside it was the Tweed, in which the school-boys were constantly paddling.

Gray was a man of mild temperament, and a good teacher, but his pupils entertained little respect for his abilities. Yielding, like too many others at the time, to over-indulgence, he sometimes went off on a carouse, and entered the school considerably inebriated, which was deemed vastly amusing. Nor did this sort of conduct incur any public censure. The magistrates and council, whose duty it was to call him to account, were associates in his revels, and appreciated him as a boon-companion. When elevated to a certain pitch, he sung a good song about Nelson and his brave British tars; and this in itself, in the heat of the French War, extenuated many shortcomings. At this school, too, as is usual with such seminaries in Scotland, the Bible was read as a class-book, but with no kind of reverence, or even decorum. The verses were bawled out at the pitch of the voice, without the slightest regard to intonation or elocutionary effect. When the teacher was temporarily absent, there took place a battle of the books—one side of the school against the other. On such occasions the girls, not choosing to be belligerents, discreetly retired under the tables, leaving the boys to carry on the war, in which dog-eared Bibles without boards, resembling bunches of leaves, handily flew about as missiles. To have to look back on this as a place of youthful instruction!

There was another stage in my educational career. I was advanced to the grammar-school, as it is called, a superior burgh establishment, of which Mr. James Sloan was head-master. Here I was introduced to Latin, for which the fee was five shillings a quarter. My progress was very indifferent. Of course it was very stupid of me not intuitively appreciating this branch of learning, and likewise in feeling that its acquisition was a cheerless drudgery. Like others, perhaps, in like circumstances, I have lived to regret my inattention, or call it incapacity; for even the small knowledge of Latin which I did acquire during two years of painful study, has not failed to be of considerable service in various respects.

Mr. Sloan was held in general esteem, and justly reputed as an excellent teacher. He grounded well, and apt scholars got on famously with him. My brother, who, like myself was advanced from

the burgh to the grammar-school, became a proficient and favorite pupil; his mind, as it were, taking naturally to his instruction in the classics. The healthy locality of the school was much in its favor, and attracted boarders from Edinburgh, the colonies, and elsewhere. The association of town scholars with boys from a distance was a pleasing feature in the establishment, and proved mutually advantageous. I could have nothing to say derogatory of the method of culture but for the severity of discipline which was heedlessly pursued, according to what, unfortunately, was too common at the period.

The truth is, violence held rule almost every-where; the desperate warlike struggle in which the country was engaged, apparently postponing all pacific and humane notions. Boys—the boy-nature being neither studied nor understood—were flogged and buffeted unmercifully, both at home and at school; and they in turn beat and domineered over each other according to their capacity, harried birds' nests, pelted cats, and exercised every other species of cruelty within their power. A coarse, bustling carter in Peebles, known by the facetious nickname of "Puddle Mighty," used to leave his old, worn-out and much abused horses to die on the public green, and there, without incurring reprobation, the boys amused themselves by, day after day, battering the poor prostrate animals with showers of stones till life was extinct. In the business of elementary instruction, the law of kindness was as yet scarcely thought of. Orders were sometimes given to teachers not by any means to spare the rod. "I've brought you our Jock; mind ye, lick him weel!" would a mother of Spartan temperament say to Mr. Gray, at the same time dragging forward a struggling young savage to be entered as a pupil; and so Jock was formally resigned to the dominion of the tawse.

I can never forget a scene which took place in Mr. Sloan's seminary one summer afternoon. In the morning of that day a sensation had been created by the intelligence that two of the boarders, gentlemen's sons from Edinburgh, had absconded, and that two town-constables—one of them Drummer Will—had been dispatched in search of them. The youths were caught, brought back in disgrace, and were now to suffer a punishment suitable to the gravity of the offense. Sullen and terrified, the two culprits stood before the assembled school; the two town-officers in their scarlet coats sitting as a guard within the doorway. The usual hum ceased. There was a death-like stillness. First reproaching the offenders with their highly improper conduct, the teacher ordered them instantly to strip for flogging. The boys resisted, and were seized by an assistant and the two officers. With clothes in disorder, they were laid across a long, desk-like table, the rise of which in the middle offered that degree of convexity which was favorable to the application of the tawse. Kicking and screaming, they suffered the humiliating infliction, and the school was forthwith dismissed for the day. Such things at the

period were matters of course, even of approbation, and therefore it would be wrong to condemn teachers who fell in with the general fashion. Teaching, it was imagined, could not be conducted otherwise; school, like army flogging, was an authorized national institution.

Laying aside any consideration of the elementary branches and the classics, the amount of instruction at these schools was exceedingly slender. At not one of them was there taught any history, geography, or physical science. There was not in my time a map in any of the schools, in which respect the place had fallen off; for at the sale of the effects of Mr. Oman, a previous teacher, my father bought a pair of old globes, and it was chiefly from these that my brother and I obtained a competent knowledge of the terrestrial and celestial spheres. Possibly I have said more than enough of my school remembrances; and I finish with stating that my entire education, which terminated when I was thirteen years of age, cost, books included, somewhere about six pounds. So little was taught in the way of general knowledge, that my education, properly speaking, began only when I was left to pick it up as opportunities offered in after life.

There are a few circumstances of a pleasing nature mixed up with these dismal recollections. I refer to rural rambles and books. I spent many hours on the picturesque banks of the Tweed, and in angling excursions to Manor Water. Half-holiday visits to Neidpath Castle, a deserted residence of the Dukes of Queensberry, were a frequent amusement. The castle was appropriated as a depot for the clothing and accoutrements of the local militia, placed under charge of a worthy old soldier, Sergeant Veitch; and through my acquaintance with one of his sons, I had the *entrée* to the fortalice. The sergeant was generally looked up to. In virtue of his military knowledge, he was appointed drill-master to the awkward squad, and for the same reason was intrusted with the custody of the local militia arms. Bred a weaver, he worked at a loom which was placed in a deep window recess, in what was usually styled the Duke's Drawing-room. At times, he condescended to speak to me, and to mention incidents in his career, while a sergeant in a foot regiment, at Bunker Hill and other places of note during the great American war, all of which contributed to my small stock of knowledge.

Two annual fairs, with their concourse of traveling merchants, shows, gingergread, and wheel of fortune men, made a pleasing break in the monotony of the place. For many years these fairs were frequented by a personage known as "Beni Minori," who carried about a singularly attractive raree show. The real name of this humble showman was Robert Brown; that of Beni Minori having been assumed for professional reasons. Brown was born in London in 1737, and reared under the charge of his grandparents near Carlisle, where he remembered the passing of Prince Charles Stuart on his

way into and out of England, the subsequent surrender of the Highland garrison to the Duke of Cumberland, and the still later and more agitating sight of the bloody heads over the gates of the city. The early years of Brown's life were spent as a post-boy. He then went to sea in 1759, was captured by the French, and remained a prisoner till the end of the "Seven Years' War." Next he went to the West Indies, and had a perfect recollection of the famous victory achieved by Rodney, April 12, 1782. Returning to England, he purchased the show-box of an old and dying Italian, named Beni Minori, and assuming his name, he was, from some resemblance to the deceased, universally recognized as the same personage. Now began the wanderings of Beni, otherwise Brown, through the north of England and southern counties of Scotland, every-where carrying his show-box on his back, and resorting to all the fairs within his rounds. Our first interview with Beni was in Peebles about 1805, and the last time we saw him was in 1839, in the Edinburgh Charity Work-house, where this aged and industrious man had at length found a sheltering roof under which to die. Here were learned the leading particulars of Beni's variegated life. He mentioned that his mother had been dead a hundred and two years; for, in giving him birth, she survived only a quarter of an hour. He had long ceased to have a single relation in the world. Twelve years ago he had lost his wife, to whom he had been united sixty-four years. There was no living being to whom he could look with the eyes of affection. The only thing he cared for was his show-box, which he daily cleaned and arranged; every picture, ring, and cord being to him like the face of an old friend. Though thus cast a living wreck on the shores of time, Beni always retained the liveliness which had procured for him the attachment of the boys of Peebles. His appearance was still that of a weather-beaten foreigner. He wore ear-rings, chewed tobacco, and joked till the last. With some little assuagement of his condition, provided by the kindness of a few acquaintances, Beni survived till June, 1840, when he died at the age of 103 years.

Among the musical geniuses, vocal and instrumental, who enlivened, or perhaps troubled the fairs, there was a venerable violinist, John Jameson by name, a kind of type of "Wandering Willie." Aged and blind, John wandered through the county, playing at kirns, penny-weddings, and fairs; all his journeys being on foot, and performed with the assistance of two faithful companions, his wife, Jenny, and an old white horse, probably worth ten shillings. The manner in which this humble trio went about from place to place, generally getting lodgings at farm-steadings for nothing, or at most for a tune on the violin, was so remarkable as to deserve commemoration. First came the wife, limping with one hand pressed on that unfortunately rheumatic side, the other leading the old horse by a halter. Second, the horse, which never seemed very willing to get along, and needed to be pulled with all the vigor which Jenny's spare hand could

impart. Across its back, pannier fashion, hung on one side John's weather-worn fiddle-case, while on the other was a bag of apples, an article in which the wife dealt in a small way. Last of all came John, led by the tail of the reluctant quadruped; so that the whole cavalcade moved in a piece—Jenny pulling at the horse, and the horse pulling at John; and in this way the party managed to make out their journeys through Peebleshire.

Though not disposed to be so sedentary as my brother, I had scarcely a less ardent attachment to books. These, however, I possessed no means of purchasing. To procure the objects of my desire, I executed with a knife various little toys, which I exchanged for Juvenile books with my better provided companions. The room occupied by my brother and myself was more like a workshop than a sleeping apartment, on account of the disorder which was caused by these mechanical operations.

Let us again return to Robert's account of these early school-days:

"My first two years of schooling were spent amidst the crowd of children attending Mr. Gray's seminary. On the easy terms of two shillings and twopence per quarter I was well grounded by the master and his helper in English. The entire expense must have been only about eighteen shillings, a fact sufficient to explain how Scotch people of the middle class appear to be so well educated in comparison with their southern compatriots. It was prior to the time when the intellectual system was introduced. We were taught to read the Bible and Barrie's 'Collection,' and to spell words. No attempt was made to enlighten us as to the meaning of any of the lessons. The most distressing part of our school exercises consisted in learning by heart the Catechism of the Westminster Assembly of Divines, a document which it was impossible for any person under maturity to understand, or to view in any other light than as a torture. It was a strange, rough, noisy, crowded scene, this burgh school. No refinement of any kind appeared in it. Nothing kept the boys in any sort of order but flagellation with the tawse. Many people thought the master did not punish enough. This idea, in fact, was the cause of an act of wild justice, which I saw executed one day in the school.

"The reader must imagine the school-hum going on in a dull monotone, when suddenly the door burst open, and in walked a middle-aged woman of the humbler class, carrying something in her right hand under her apron. The school sunk into silence in an instant. With flashing eyes and excited vision, she called out, 'Where is Jock Forsyth.' Jock had maltreated a son of hers on the green, and she had come to inflict vengeance upon him before the whole school. Jock's conscious soul trembled at the sight, and she had no difficulty in detecting him. Ere the master had recovered his astonishment which her intrusion had created, the fell virago had pounced upon the culprit, had dragged him into the middle of the floor, and there

began to belabor him with the domestic tawse, which she had brought for the purpose. The screams of the boy, the anxious entreaties of the master, with his constant 'Wifie, wifie, be quiet, be quiet,' and the agitated feeling which began to pervade the school, formed a scene which defies words to paint it. Nor did Meg desist till she had given Master Forsyth reason to remember her to the latest day of his existence. She then took her departure, only remarking to Mr. Gray, as she prepared to close the door, 'Jock Forsyth will no' meddle with my Jamie again in a hurry."

"Boys for whom a superior education was desired were usually passed on at the beginning of their third year to the grammar-school, the school in which the classics were taught, but which also had one or two advanced classes for English and writing. This was an example of an institution which has affected the fortunes of Scotsmen not much less than the parish schools. Every burgh has one, partly supported out of public funds. For a small fee (in the Peebles grammar-school it was only five shillings a quarter), a youth of the middle classes gets a good grounding in Latin and Greek, fitting him for the university; and it is mainly, I believe, through this superior education, so easily attained, that so many of the youth of our northern region are inspired with the ambition which leads them upwards to professional life in their own country, or else sends them abroad in quest of the fortune hard to find at home. I observe, while writing these pages, the advertisement of an academy in England, where, beside sixty pounds by way of board, the fees for tuition amount to twenty-five. For this twenty-five pounds, a Scottish burgher of my young days could have five sons carried through a complete classical course. The difference is overwhelmingly in favor of the Scotch grammar-school, as far as the money matter is concerned. And thus it will appear that the good education which has enabled me to address so much literature, of whatever value, to the public during the last forty-five years, never cost my parents so much as ten pounds.

"There was a bookseller in Peebles, a great fact. There had not always been one; but some years before my entrance upon existence, a decent man named Alexander Elder had come to the town, and established himself as a dealer in intellectual wares. He was a very careful and sober man, and in the end, as was fitting, became rich in comparison with many of his neighbors. It seems a curious reminiscence of my first bookseller's shop, that, on entering it, one always got a peep of a cow, which quietly chewed her cud close behind the book-shelves, such being one of Sandy's means of providing for his family. Sandy was great in Shorter Catechisms, and what he called *spells*, and school Bibles, and Testaments, and in James Lumsden's (of Glasgow) halfpenny colored pictures of the 'World Turned Upside Down,' the 'Battle of Trafalgar,' etc., and in penny chap-books of an extraordinary coarseness of language. He had stores, too, of school slates and *skeely*, of paper for copies, and of pens, or rather

quills, for 'made' pens were never sold then, one of which he would hand us across his counter with a civil glance over the top of his spectacles, as if saying, 'Now, laddie, see and mak' a guid use o't.' But Sandy was enterprising and enlightened beyond the common range of booksellers in small country towns, and had added a circulating library to his ordinary business. My father, led by his strong intellectual tastes, had early become a supporter of this institution, and thus it came about that by the time we were nine or ten years of age, my brother and I had read a considerable number of the classics of English literature, or heard our father read them; were familiar with the comicalities of 'Gulliver,' 'Don Quixote,' and 'Peregrine Pickle;' had dipped into the poetry of Pope and Goldsmith, and indulged our romantic tendencies in books of travel and adventure, which were to us scarcely less attractive than the works of pure imagination. When lately attending the Wells of Homburg, I had but one English book to amuse me, Pope's translation of the 'Iliad,' and I felt it as towards myself an affecting reminiscence, that exactly fifty years had elapsed since I perused the copy from Elder's library, in a little room looking out upon the High Street of Peebles, where an English regiment was parading recruits raised for Wellington's Peninsular campaign.

"There was certainly something considerably superior to the common book-trader in my friend Alexander Elder, for his catalogue included several books striking far above the common taste, and somewhat costly withal. There was, for example, a copy of a strange and curious book of which Sir Walter Scott speaks on several occasions with great interest, a metrical history of the clan Scott, written about the time of the Revolution by one Walter Scott, a retired old soldier of the Scottish legions of Gustavus Adolphus, who describes himself unnecessarily as 'no scholar,' for in its rhyme, metre, and entire frame of language it is truly wretched, while yet interesting on account of the quaintness of its ideas and the information it conveys. Another of Sandy's book treasures—and the money value of them makes the term appropriate—was the 'Æneidos of Virgil,' translated into Scottish verse by Gavin Douglas, Bishop of Dunkeld, well known as a most interesting product of the literary mind of Scotland at the beginning of the sixteenth century, and gratifying to our national vanity as prior to any translations of Virgil into English.

"In a fit of extraordinary enterprise, Sandy had taken into his library the successive volumes of the fourth edition of the 'Encyclopædia Britannica,' and had found nobody but my father in the slightest degree interested in them. My father made a stretch with his moderate means, and took the book off Sandy's hands. It was a cumbrous article in a small house; so, after the first interest in its contents had subsided, it had been put into a chest (which it filled), and laid up in an attic beside the cotton wefts and the meal ark. Roaming about there one day, in that morning of intellectual curi-

osity, I lighted upon the stored book, and from that time for weeks all my spare time was spent beside the chest. It was a new world to me. I felt a profound thankfulness that such a convenient collection of human knowledge existed, and that here it was spread out like a well-plenished table before me. What the gift of a whole toy-shop would have been to most children, this book was to me. I plunged into it. I roamed through it like a bee. I hardly could be patient enough to read any one article, while so many others remained to be looked into. In that on Astronomy, the constitution of the material universe was all at once revealed to me. Henceforth I knew—what no other boy in the town then dreamed of—that there were infinite numbers of worlds besides our own, which was by comparison a very insignificant one. From the zoölogical articles, I gathered that the animals, familiar and otherwise, were all classified into a system through which some faint traces of a plan were discernible. Geography, of which not the slightest elements were then imparted at school, here came before me in numberless articles and maps, expanding my narrow village world to one embracing the uttermost ends of earth. I pitied my companions who remained ignorant of what became to me familiar knowledge. Some articles were splendidly attractive to the imagination; for example, that entitled Aerostation, which illustrated all that had been done in the way of aerial traveling from Montgolfier downwards. Another paper interested me much,—that descriptive of the inquiries of Dr. Saussure regarding the constitution and movement of glaciers. The biographical articles, introducing to me the great men who had laid up these stores of knowledge, or otherwise affected the destinies of their species, were devoured in rapid succession. What a year that was to me, not merely in intellectual enjoyment, but in mental formation! I believe it was my eleventh, for before I was twelve, misfortune had taken the book from us to help in satisfying creditors. It appears to me somewhat strange that, in a place so remote, so primitive, and containing so little wealth, at a time when the movement for the spread of knowledge had not yet been thought of, such an opportunity for the gratification of an inquiring young mind should have been presented. It was all primarily owing to the liberal spirit of enterprise which animated this cow-keeping country bookseller.

"The themes first presented to the young mind certainly sink into it the deepest. The sciences of which I obtained the first tracings through the "Encyclopædia," have all through life been endeared to me above the rest. The books of imagination which I first read from Elder's library have ever borne a preference in my heart, whatever may be the judgment of modern taste regarding them. It pains me to this day to hear severe remarks made upon Fielding and Sterne. I should feel myself to be a base ingrate if I could join in condemning men who first gave me views of social life beyond my natal village sphere, and who, by their powers of entertainment, lent

such a charm to years during which material enjoyments were few. These intellectual 'loves of life's young day' sometimes led literary men in the choice of themes for their own pens. It was from such a feeling regarding Smollett, that I was induced to make an effort to set his life in a more respectful light before the world than it had previously enjoyed, while assuredly invited to other tasks in several respects more promising. It strikes me that gratitude to an author, also to a teacher, to any one who has benefited us intellectually, is as desirable a form of the feeling as any. I raise statues in my heart to the fictionists above-named, and to many others who nowhere have statues of bronze or marble, and I likewise deem it not unfitting that there should be flower-crowned miniatures in my bosom of James Sloan and Sandy Elder."

I can unite in these commendations. With Elder's field of literature laid open to us, Robert and I read at a great rate, going right through the catalogue of books without much regard to methodized study. In fact, we had to take what we could get and be thankful. Permitted to have only one volume at a time, we made up for short allowance by reading as quickly as possible, and, to save time, often read together from the same book, one having the privilege of turning over the leaves. Desultory as was this course of reading, it undoubtedly widened the sphere of our ideas; and it would be ungrateful not to acknowledge that some of my own success, and not a few of the higher pleasures experienced in life, are primarily due to that library in the little old burgh.

Enough—perhaps more than enough—has been given of these reminiscences of boyish days, and something may now be said of the circumstances which, in a strangely unexpected manner, sent my brother and myself adrift into the world that lay beyond our hitherto limited horizon.

The calm tenor of my father's affairs was at length abruptly ruffled. The introduction of the power-loom and other mechanical appliances had already begun to revolutionize the cotton trade. Down and down sank hand-loom weaving, till it was threatened with extinction, and ultimately the trade was followed only as a desperate necessity. Happy were those who gave it up in time, and betook themselves to something else. Moved by the declining aspect of his commission business, by father bethought himself of commencing as a draper. For this purpose, he alienated the small property in which my brother and I were born, and removed to a central part of the town. Here he began his new line of business, for which, excepting his obliging manners, he had no particular qualification. As, however, there was then little of that eager striving which is now conspicuous everywhere, matters would have gone on pretty well, but for one untoward circumstance.

As an out-of-the-way country town, Peebles had been selected by

government as a place suitable for the residence of prisoners of war on parole, shortly after the re-commencement of hostilities in 1803. Not more, however, than twenty or thirty of these exiles arrived at this early period. They were mostly Dutch and Walloons, with afterwards a few Danes—unfortunate mariners seized on the coast of the Netherlands, and sent to spend their lives in an inland Scottish town. These men did not repine. They nearly all betook themselves to learn some handicraft, to eke out their scanty allowance. At leisure hours they might be seen fishing, in long leather boots, as if glad to procure a few trouts and eels, and at the same time satisfy the desire to dabble in the water. In 1810, a large accession was made to this body of prisoners of war, by the arrival of upwards of a hundred officers of an entirely different quality. They consisted of French, Poles, and Italians, in a variety of strange, tarnished uniforms, fresh from the seat of war in the Peninsula. These unfortunate gentlemen, a few of them very young, were accommodated with lodgings in the town, and being scarcely under any sort of restriction, they gradually became domesticated in several families. For their own amusement, as well as to repay acts of hospitality,—perhaps, also, to make friends among the trades-people,—they set up a private theater in an old ball-room, in which they enlivened the town by performing gratuitously some of the plays of Corneille and Molière To these performances I was freely admitted, on my father's account; and so reaped the double advantage of having my ear accustomed to the French language, and of being made acquainted with some of the French dramatists. Nor did I dislike the French on other accounts. The kitchen of their mess offered a market for my rabbits, which I bred as an article of commerce to aid in purchasing books.

My mother, even while lending her dresses and caps to enable performers to represent female characters, never liked the intimacy which had been formed between the French officers and my father. Against his giving them credit, she constantly remonstrated in vain. It was a tempting but perilous trade. For a time they paid wonderfully well. A number of them, when captured in Spain, had secreted sums of money about their person, and gold ducats and sequins, as I remember, were for a period as common as guineas in Peebles; though that, perhaps, is not saying very much. These exiles likewise occasionally received remittances from France; for although the war was going on very hotly, there was still, as a matter of public convenience, some kind of postal intercourse maintained with the French coast. With such allurements, my father confidingly gave extensive credit to these strangers, men who, by their position, were not amenable to the civil law, and whose obligations, according, were altogether debts of honor. The consequence was what might have been anticipated. An order suddenly arrived from the government, commanding the whole of the prisoners to quit Peebles, and march chiefly to Sanquhar in Dumfriesshire, the cause of the movement being the

prospective arrival of a militia regiment. The intelligence came one Sunday afternoon. What a gloom prevailed at several firesides that fatal evening!

On their departure, the French prisoners made many fervid promises that, should they ever return to their own country, they would have pleasure in discharging their debts. They all got home at the peace in 1814, but not one of them ever paid a farthing. A list of their names, debts, and official position in the army of Napoleon, remains as a curiosity in my possession. It is not unlikely that a number of these returned exiles found a grave on the field of Waterloo. Whatever became of them, there was soon a crisis in my father's affairs. The pressure might have been got over, for with patience there were means to satisfy all demands; but the possibility of rectifying affairs was defeated by weakly taking the advice of an interested party, a relative of my mother, who recommended a sequestration. The result was that the sage adviser, as trustee, managed every thing so adroitly for his own benefit, that the creditors received but a small dividend, and the family lost almost every thing. It is hateful to refer to this piece of folly and villainy, because it reminds me of poignant distresses; but it is necessary to give it some degree of prominence, for it forms the pivot on which the present narrative turns.

By various shifts, the family continued to struggle on for a year or two in Peebles after this catastrophe. The penury which was endured was less painful than the acute sense of social degradation. My mother looked for some sympathy and assistance from her brother and also from other relatives at a distance, but without avail. Feeling, with a too keen susceptibility, that he had lost caste, my father never quite held up his head after this event; yet, deplored at the time, it really proved a fortunate circumstance. Like a wholesome though unpleasant storm in a stagnating atmosphere, it cleared the way for a new and better order of things. A seemingly great misfortune ultimately proved to be no misfortune at all, in fact, a blessing, for which my brother and I, as well as other members of the family, could not be sufficiently thankful.

The wise resolution was adopted of quitting Peebles. My mother, animated by keen anxiety and foresight, was particularly solicitous to remove, with a view to procure means of advancement for her sons. Accordingly, impelled alike by necessity and inclination, the family removed to Edinburgh, Robert being alone left to pursue his education for a short time longer. Crowded into the *Fly*, then the only engine of public conveyance to the Scottish capital, we crossed the Kingside-Edge, as a high ridge of land is called, on a bleak day in December, 1813, my mother with an infant daughter on her knee, and a heart full of mingled hopes and fears of the future. It was a five hours' journey, of which one entire hour was spent at Venture-fair to rest the horses. Here the party were hospitably entertained

with warm kail by Jenny Wilson, who kept the small inn along with her brother William. So reinvigorated, we drove on in somewhat better spirits, entering Edinburgh by the Causeway side; my mother with but a few shillings in her pocket—there was not a half-penny in mine.

SETTLING IN EDINBURGH—1813–1814.

Families falling by misfortune into straightened circumstances, of course lose many old friends and acquaintances, at least as far as familiar personal intercourse is concerned. This loss, though often the subject of sorrowful and angry remark, is not an unmitigated evil. Sympathy is doubtless due, throughout all perplexing social distinctions; gracious are the acts of a true friend; kindness to the unfortunate will ever command approbation; but let us not forget that it is better for personal intimacies to suffer some modification, than for the impoverished to lose self-respect and become dependent on a system of habitual condescension. It seems hard to take this view of the matter, but I fear that on no other basis can the indigent aspire to be the associates of the affluent. Could matters be seen rightly, they would appear to be as well ordered in this as in other things which concern our welfare.

Happily, the defection, real or apparent, of old friends is not uncompensated. Sinking into a lower sphere, a new and hitherto undiscovered region is disclosed. A higher class, as we are apt to feel, has cruelly turned its back on us; but we are received with open arms by a very good and agreeable sort of people, in whose moderate incomes, and, it may be, misfortunes and struggles, we feel the pleasures of fellowship. The Vicar of Wakefield, it will be recollected, did not find the jail such a bad thing after all.

My parents, on settling in Edinburgh, may be presumed to have found consolations of this nature. According to immemorial usage, families with limited means from the southern counties of Scotland, who seek a home in the capital, sagaciously pitch on one of the second-rate streets in the southern suburbs. There, sprinkled about in common stairs, they form a kind of colony, possessing a community of south-country recollections and gossip.

Following the established rule, our first home was a floor entering from a common stair in West Nicolson street. Beneath us, level with the ground, resided a poor widow, who drew a scanty living from a small huckstery concern. Immediately above us dwelt the widow of a Roxburgshire clergyman, a motherly person, with two grown-up daughters. Over this respectable family, and highest of all, was a tailor, who, working in the window-sole of his apartment, had the reputation of doing things cheaply. On a level with us, next tenement, but entering by a different stair, was a family of some distinction, consisting of the two ladies, Miss Betty and Miss Ailie Hay,

already spoken of by my brother. The kitchen fire-places of both dwellings being back to back, with a thin and imperfect wall between, the servant girls of the two families, both exiles from Tweedside, were able to carry on comforting conversations by removing a brick at pleasure in the chimney; through which irregular channel much varied intelligence from Peebles-shire was interchanged between the two families. Here we lived till Whitsunday, 1814, when we removed to a floor of a like quality in Hamilton's Entry, Bristo street, the back windows of the house overlooking the small court in which is situated a little old building, with a tiled roof, that had been Walter Scott's first school in Edinburgh.

If any thing, the families hereabout were more hard-up, and, to be plain, we were more hard-up too. Our dwelling was on the second floor of the stair, and on the flat immediately beneath resided Ebenezer Picken, a scholarly gentleman in reduced circumstances, who, after trying various shifts to secure a living for himself and family, now professed to teach languages, and endeavored to sell by subscription one or two volumes of poems, which, I fear, did not do much for him. He died in 1816. His son, Andrew, who was also a poetic genius, and about my own age, became affected with the mania concerning Poyais, and emigrated with a number of others to that pestilential marsh, where most of the settlers died shortly after landing, Andrew kindly acting as chaplain, with a shirt for surplice, and reading the funeral service. From a fellow-feeling in circumstances, we formed an intimacy with our neighbors the Pickens, while residing in the same tenement, and the friendship was extended over a series of years, until the remaining members of the family went to America.

As regards ways and means. On coming to Edinburgh, my father had resumed his commission business from Glasgow cotton-manufacturers, but this trade had long been declining, and was but a meager dependence. To aggravate his difficulties, he was not qualified by knowledge of the world to deal with the class of workmen to whom he furnished employment. Some of them were decent enough old sinewy men, sufficiently trustworthy; but others, accustomed to go on the tramp, used artifices that baffled his ingenuity. Carrying on their handicraft in obscure recesses in Fountainbridge, St. Ann's Yards, the Back of the Canongate, or Abbey Hill, it was sometimes as difficult to trace them out as to get any right clew to their maneuvers. It was by no means unusual to find that the materials intrusted to them were dishonestly pawned, and that sums of money advanced for half-done work on piteous appeals of distress were irrecoverable. In short, my father was much too soft for this kind of business; and the result was what might have been expected. With resources on the verge of exhaustion, there ensued privations against which it required no small degree of composure to bear up. The old German flute, preserved as a precious relic throughout all the vicissitudes of the family, was sometimes resorted to as a solace, although

the favorite airs, such as "Corn Rigs," did not sound half so sweetly, it was thought, in the dingy atmosphere of Hamilton's Entry, as they had done along the Eddleston Water.

The dark Ages, as we have since jestingly called them, had begun, and for a number of successive years an acquaintance was contracted with families and individuals, who, if not experiencing a similar depression, occupied an unpretending position in society. I can recollect some of them, and also the shifty scenes to which they were less or more impelled, by the necessities of their situation. Widows of decayed tradesmen, who were moving heaven and earth to get their sons into hospitals, and their daughters taught to be governesses. Teachers in the decline of life, like poor Picken, endeavoring to draw a subsistence from the fees of most-difficult-to-be-procured pupils. Licensed preachers to whom fate had not assigned a kirk, and who, after years of pining, now made a livelihood by preparing young men for university degrees. Genteel unmarried women, left destitute by improvident fathers, who contrived to maintain themselves by coloring maps, or by sewing fine needle-work for the Repository—a benevolent and useful institution, to which be all praise. Why continue the catalogue?

There was some use in knowing and being known to these kinds of people. I speak not of the value to myself, as having an opportunity of studying some of the humbler and more characteristic phases of society. To my father and mother, these persons, with their varied experience, could furnish hints as to how petty difficulties incidental to their condition might be overcome. One or two things they seem to have made their special study. They knew the proper methods of applying for situations in public offices, and what expedients could be attempted to elude the payment of rates and taxes. For the most part, they entertained a high respect for, and duly stood in awe of, magistrates, ministers, and great men generally; for it was only through such distinguished authorities that certificates of character and help in various ways could be obtained in cases of emergency. Far be it from me to impute dishonesty to these ingeniously struggling and scheming classes. On the whole, in the darkest of their days, so far as I knew, they maintained a wonderful determination to keep square with the world. It must be admitted, however, that the classes to which I allude too frequently participated in loose notions concerning taxes. Demands of this nature seemed to be little better than asking money for nothing. Rates and taxes might be right in the abstract; that they did not question. But the collector who came periodically to your door with a portentious pocket-book, and made point-blank demands for sums of money—such as fifteen shillings and ninepence half-penny, or one pound eleven and threepence—which it was exceedingly inconvenient to pay, was clearly a nuisance; and with no stretch of conscience, he might

be coaxed, wheedled, put off, and told to call again as long as it was safe to do so.

In the midst of the straits to which these remarks refer, my father, through congeniality of taste, made the acquaintance of several persons possessed of musical and poetical acquirements. One of these was Mr. John Hamilton, author of the song, "Up in the Morning Early," who, drawing to the conclusion of his days, lived in a stair at the south end of Lothian street, and in good weather might be seen creeping feebly along the walks in the Meadows, deriving pleasure from the sunshine, to which he was soon to bid adieu. Another was Mr. Samuel Clarke, noted for his musical genius, who acted as organist of the Episcopal Chapel in the Cowgate, the services of which place of public worship were at that time conducted by the Rev. Archibald Alison, author of the "Essay on Taste," and "Sermons on the Seasons," and whose son was the late Sir Archibald Alison, author of the "History of Europe." As music was my father's overwhelming passion, his introduction to the church organ under the auspices of Clarke was a matter of extreme exultation. Entranced with the performances of the organ and choir, he became a frequent attender on the ministrations of Mr. Alison, whose persuasive piety, refined sentiments, and elegant diction, possessed, as is well known, an indescribable charm.

Charged more especially with family cares, my mother had other considerations than church music. What was to be done with me was a primary concern. I was in my fourteenth year. Further schooling was out of the question. Robert might go on with his education as long as seemed expedient, but it was time I should get to work. What would I be? My tastes lay in the direction of books; any department would do. A friend, put on the scent, reported that on inquiry of a leading member of the profession, bookselling was a poor business; at best, it was very precarious, and could not be recommended. Not discouraged, I still thought my vocation lay towards literature in some shape or other.

Since our arrival in town, I had read all that could be read for nothing at the booksellers' windows, and at the stalls which were stuck about the College and High School Wynds. I had also become a great frequenter of the evening book-auctions. The principal were Carfrae's in Drummond street, and that of Peter Cairns in the Agency Office, opposite the University. At present, book-auctions are only during the day; then they took place in the evening, and were a favorite resort. The sales were indicated by a lantern, with panes of white calico, at the door, on which was inscribed, "Auction of Books." My attendance, punctual on the hanging of the lantern, was a new and delightful recreation. The facetiæ of the auctioneers, their observations on books and authors, and the competitions in the biddings, were all interesting to a lad fresh from the country. Carfrae's was the more genteel and dignified. Cairns' was the more

amusing of these lounges, wherefore it suited best for those who went for fun, and not for buying, on which account it chiefly secured my patronage.

Peter was a dry humorist, somewhat saturnine from business misadventures. Professedly, he was a bookseller in South College street, and exhibited over his door a huge sham copy of Virgil by way of sign. His chief trade, however, was the auctioning of books and stationery at the Agency Office, a place with a strong smell of new furniture, amidst which it was necessary to pass before arriving at the saloon in the rear where the auctions were habitually held. Warm, well lighted, and comfortably fitted up with seats within a railed inclosure, environing the books to be disposed of, this place of evening resort was as good as a reading room; indeed, rather better, for there was a constant fund of amusement in Peter's caustic jocularities, as when he begged to remind his audience that this was a place for selling, not for reading books, sarcasms, which always provoked a round of ironical applause. His favorite author was Goldsmith, an edition of whose works he had published, which pretty frequently figured in his catalogue. On coming to these works, he always referred to them with profound respect; as, for example, "The next in the catalogue, gentlemen, is the works of Oliver *Gooldsmith*, the greatest writer that ever lived, except Sheakespeare; what do you say for it? I'll put it up at ten shillings." Some one would perhaps audaciously bid twopence, which threw him into a rage, and he would indignantly call out, "Tippence, man; keep that for the *brode*," meaning the plate at the church door. If the same person dared to repeat the insult with regard to some other work, Peter would say, "Dear me, has that poor man not got rid of his tippence?" which turned the laugh, and effectually silenced him all the rest of the evening. Peter's temper was apt to get ruffled when biddings temporarily ceased. He then declared that he might as well try to auction books in the poorhouse. On such occasions, driven to desperation, he would try the audience with a bunch of quills, a dozen black-lead pencils, or a "quare" of Bath-post, vengefully knocking which down at the price bidden for them, he would shout to "Wully," the clerk, to look after the money. Never minding Peter's querulous observations further than to join in the general laugh, I, like a number of other penniless youths, got some good snatches of reading at the auctions in the Agency Office. I there saw and handled books which I had never heard of, and in this manner obtained a kind of notion of bibliography. My brother, who, like myself, became a frequenter of the Agency Office, relished Peter highly, and has touched him off in one of his essays.

Inquiries for the situation of apprentice in a bookseller's shop not proving successful, and time wearing on, I relinquished my preconceived fancies, and stated that I should be glad to be put to any line of business whatever. No sooner had this been concluded on

than an opening seemed to cast up in a grocer's shop situated in the Tolbooth Wynd, Leith. Unfortunately, Leith was two miles distant, but it was announced that the grocer munificently imparted board and lodging to his apprentices, and that, in present circumstances, was of some importance. It was resolved I should look after the place. Accordingly, I one day went off to Leith, trudging down from Edinburgh towards the Tolbooth Wynd, not greatly elated with the prospect before me, but determined not to be nice in accepting terms. A friend of the family resident in Leith, was to introduce me.

On reaching the spot with him, nearly opposite the public fountain, I paused a moment outside to reconnoiter the grocer's premises, before proceeding. The windows exhibited quantities of raw sugar in different varieties of brownness, hovering over which were swarms of flies in a state of frantic enjoyment. Sticks of black liquorice leaned coaxingly on the second row of panes, flanked by tall glass jars of sweeties and peppermint drops; behind these outward attractions, there were observable yellow-painted barrels of whisky, rows of bottles of porter, piles of cheeses of varied complexions, firkins of salt butter, and boxes of soap. At the counter were a number of women and children buying articles, such as quarter-ounces of tea and ounces of sugar; and the floor was battered with dirt and *dêbris*.

I was not much pleased with the look of the place, but I had no choice. Entering, somewhat timidly, with my conductor, I was described as the boy who had been recommended as an apprentice, and was ushered into the back room to be examined as to my capabilities. It was immediately seen that I was physically incompetent to fill the situation. The chief qualification in demand was muscular vigor. The boy wanted would have to draw a truck loaded with several hundredweights of goods, to be delivered to customers, it might be miles distant. Instead of an apprentice, it was in reality a horse that might have been advertised for, or at the least an able-bodied porter. I was at once pronounced to be unfit for this enviable post; a much too delicately made youth, a day's work with the barrow or the bottle-basket would finish me. I had better abandon the idea of being a grocer. With these remarks pronounced for doom, I retired, not a little down-cast at the unfortunate issue of the expedition, and sorrowfully returned up the Walk to Edinburgh.

MY APPRENTICESHIP—1814 TO 1819.

How little are we able to penetrate the future!. The journey to Leith was not thrown away. In returning homewards, I had occasion to pass the shop of Mr. John Sutherland, bookseller, Calton street, an establishment opposite the Black Bull Hotel, the starting-place of the mail-coaches for London. In the window was the announcement, "An Apprentice Wanted." Here was the right thing

at last. I did not lose time in communicating this piece of intelligence.

Having in the first place narrated the failure of the Leith affair, I proceeded to describe the discovery I had made in Calton street. There was forthwith a family cogitation on the subject, and it was resolved that next day I should accompany my mother on a tour of investigation into the nature of the place. Next morning, accordingly, after being brushed up for the occasion, I set out for Sutherland's. Our reception was gratifyingly polite. The bookseller expressed himself satisfied with my appearance and the extent of my education. He said that in all respects I should be perfectly qualified for the situation. My principal duties for one or two years would be very easy. I would only have to light the fire, take off and put on the shutters, clean and prepare the oil lamps, sweep and dust the shop, and go all the errands. When I had nothing else to do, I was to stand behind the counter, and help in any way that was wanted; and talking of that, it would be quite contrary to rule for me ever to sit down, or to put off time reading.

In laying down the law, Sutherland admitted that at first the duties, though no way burdensome, might not, perhaps, be very pleasant, but the routine was sanctioned by immemorial usage. Constable and all the other great booksellers had begun in this way. Every one who aspired to take a front rank in the profession must begin by being a junior apprentice. The period of service was five years at four shillings a week; not high pay, to be sure, but it was according to universal rule, from which he could see no departure.

My mother, who conducted the negotiation, found no fault with the proposed duties and terms; still she had her misgivings, and ventured to remark that her son was surely wrong in wishing to follow the business. "We may manage," she said "to get him through his apprenticeship, but I have serious fears of what is to follow. We can not set him up in business, and how" (looking around) "can he ever be able to get a stock of books like that?"

The bookseller endeavored to allay her apprehensions, and his remarks are worth repeating: "There is no fear of any one getting forward in the world, if he be only steady, obliging, attentive to his duties, and exercise a reasonable degree of patience. I can assure you, when I was the age of your son, I had as poor prospects as any one; yet I have so far got on tolerably well. In the outset of life it is needless to look too far in advance. We must just do the best we can in the mean time, and hope that all will turn out rightly in the end." These sensible observations left nothing further to be said. The bargain was struck. I was to come next Monday morning to be initiated by an elder apprentice. And so, on the 8th of May, 1814, I was launched into the business world.

About a year and a half after this event, the family quitted Edinburgh. My father was appointed commercial manager of a salt man-

ufactory, called Joppa Pans, a smoky odorous place, consisting of a group of sooty buildings, situated on the sea-shore half-way between Portobello and Musselburgh; and thither, to a small dwelling amidst the steaming salt-pans, they all removed except myself. Robert, who had now come from Peebles, and been for some time at an academy in Edinburgh, accompanied them, the arrangement being that he should walk to and from town daily. I was left to pursue my business, being for this purpose consigned to a lodging that may merit some notice.

Until this disruption, I had no occasion to rely on myself. Now matters were changed. I was to have an opportunity of learning practically how far my weekly earnings would go in defraying the cost of board and lodging. In short, at little above fourteen years of age, I was thrown on my own resources. From necessity, not less than from choice, I resolved at all hazards to make the weekly four shillings serve for every thing. I can not remember entertaining the slightest despondency on the subject. As with other lads of my age, I had something to interest me in the circumstances attending the close of the war, and the excitement which followed on various matters of public concern.

As favorable for carrying out my aims at an independent style of living, I had the good fortune to be installed in the dwelling of a remarkably precise and honest widow, a Peebles woman, who, with two grown-up sons, occupied the top story of a building in the West Port. My landlady had the reputation of being excessively parsimonious, but as her honesty was of importance to one in my position, and as she consented to let me have a bed, cook for me, and allow me to sit by her fireside — the fire, by the way, not being much to speak of—for the reasonable charge of eighteen pence a week, I was thought to be lucky in finding her disposed to receive me within her establishment. To her dwelling, therefore, I repaired with my all, consisting of a few articles of clothing and two or three books, including a pocket Bible—the whole contained in a small blue-painted box, which I carried on my shoulder along the Grassmarket.

This abode, the uppermost floor in Boak's Land, was more elevated than airy. The back of the tall edifice overhung a tannery and a wild confusion of mean inclosures, with an outlook beyond to the castle, perched on its dark, precipitous rock. The thoroughfare in front was then, as it is still, one of the most crowded and wretched in the city. The apartment assigned to me was a bed-closet, with a narrow window fronting the street. Yet this den was not all my own. For a time, it was shared with a student of divinity, a youth of my own age from the hills of Tweeddale; and afterwards with my brother Robert, when it was found inexpedient for him to live in the country, and go to and from town daily.

Being all of us from Peeblesshire, there was much to speak of in common, though with no great cordiality of intercourse. In the

evenings, when mason and carpenter lads dropped in, the conversation turned chiefly on sermons. Each visitor brought with him experiences as to how texts had been handled on the preceding Sunday; on which there ensued discussions singularly characteristic of a well-known phase in the Scotch mind.

"Weel, Tammie," inquired the widow one evening of Tammie Tod, a journeyman mason lately arrived from the country, "what was the doctor on last afternoon?"

"He was on the Song,"—meaning the Song of Solomon.

"Ah, the Song! that would be grand. He's a wonderfu' man the doctor; and what was his text?"

"It was a real fine text," said Tammie, "the deepest ever I heard: 'For my head is filled with dew, and my locks with the drops of the night;' fifth chapter, second verse, the second clause of the verse."

"I ken that text weel," responded the widow. "I heard a capital discourse on it thirty years syne; but how did the doctor lay it out?"

"He divided it into five heads, ending with an application, which it would be weel for us a' to tak' to heart."

And so Tammie, who had a proficiency in dissecting and criticising sermons, proceeded to describe with logical precision the manner in which his minister had handled the very intricate subject; his definitions being listened to and commented on with extraordinary relish.

Let no one hastily conclude that there was any thing to ridicule in these searching, though perhaps too speculative and familiar disquisitions; for apart from any religious consideration, they bore evidence of that spirit of inquiry and love of reasoning on momentous topics which may be said to have made Scotland what it is. I may not have been the better, but was by no means the worse, for hearing Tammie Tod's sermon experiences in that little upper floor in the West Port, and have often compared what there came under my observation with the unideaed sotting and want of all mental culture which unhappily mark certain departments of the population in different parts of the United Kingdom.

On market-days, my landlady was usually visited about dinner-time by some horny-fisted old acquaintance from about Leithen or Gala Water, with a shepherd's plaid around his shoulders; and who, after being treated to a share of the bannocks and kail, would finish off with a blast on the widow's tobacco-pipe; for, with all her saving habits, our worthy hostess indulged—moderately, I must say—in this luxury. The conversation of these worthies ran still on controversial divinity. They talked of the "Hind Let Loose," Boston's "Marrow," the "Crook in the Lot," and the "Fourfold State,"—standard topics among the class to which they belonged; and if I did not quite apprehend or was not improved by the discussions, they at least afforded an amusing study of character.

The charge made for my accommodation in these quarters left some scope for financiering as regards the remaining part of my wages. It was a keen struggle, but, like Franklin, whose autobiography I had read with avidity, I faced it with all proper resolution. My contrivances to make both ends meet were not without a degree of drollery. As a final achievement in the art of cheap living, I was able to make an outlay of a shilling and ninepence suffice for the week. Below that I could not well go. Reaching this point, I had ninepence over for miscellaneous demands, chiefly in the department of shoes, which constituted an awkwardly heavy item. On no occasion did I look to parents for the slightest pecuniary subsidy.

Was there none, all this time, to lend a helping-hand to the struggling bookseller's apprentice? I did not put any one to the test. My mother had some relations in town moving in respectable circles; but they were connected with the worthless personage whose conduct had insured my father's ruin; and, passing over any unpleasant recollections on this score I felt disinclined to court their intimacy. Admitting that I may in this respect have acted with unreasonable shyness, I am inclined to think that the policy of keeping aloof was the most advantageous in the end. Isolation was equivalent to independence of thought and action. Contact with the relatives I speak of would have been subjection.

High principle, however, hardly entered into my calculations. Pursuing my course from a resolute feeling of self-reliance, I just went on without troubling myself about any body, trusting that things somehow would come right in the long-run. I should say from my own observation that young persons often chafe unnecessarily at being neglected by those whom they imagine should take notice of them. On the contrary, as a general rule, they ought to be thankful for being let alone, with a clear stage whereon they can act their part, alike unincumbered with advice or disheartened by adverse criticism. To be always pining to be noticed, brought forward, taken by the hand, and done for, is any thing but wise or manly. There are, doubtless, instances where the deserving are entitled to such assistance as can be safely or conveniently extended towards them. But in too many cases the visionary expectation of aid paralyzes exertion, and consumes valuable time that might very properly be devoted to individual effort. At any rate, I do not doubt that I should have suffered injury at this critical period, by getting entangled with fine people, invited to fine houses, and led to mix in fine evening parties. Proceedings of that seductive kind would have been distinctly at variance with my condition. What was I but one of a thousand nameless lads, whom in passing no one knew or cared for? Shrouded by insignificance, I could fortunately, like others in a similar situation, work my way on in silence and obscurity, without any provocation to false shame, which almost more than any thing else is the stumbling-block of youth. The very circumstance of my having come from

the country, and of being little known to young men of my own standing, was a point in my favor.

It nevertheless, I own, required some fortitude to bear up against the hardships incidental to my situation as a junior apprentice, literally the slave of the lamp, and the drudge of the establishment. Though not beaten and dragooned as I had been at school, it was my destiny to experience no very gentle treatment. My employer, a stern disciplinarian, took the work out of his apprentices. He seemed to have no regard for the number of miles he caused them to walk in a day in the way of business. In addition to his trade as a bookseller, he kept a circulating library, and also acted as an agent for the State Lottery. Independently, therefore, of a multitude of errands with parcels of books and stationery, I was charged with the delivery of vast quantities of circular letters eulogizing the successive lotteries, which, in reason, ought to have been dispatched through the post-office. Frequently I was sent on my travels with as many as three hundred letters, sorted and tied in bundles in the manner of a postman; and as my circuit took me up dozens of long stairs over miles of thoroughfares, I had an opportunity of acquiring a knowledge of the town and the names of its inhabitants.

In all this I was mercilessly overtasked, and can never cease to think so. But there was something likewise to be thankful for. Sutherland enforced habits of punctuality and order, which happily stuck to me through life, along with a due appreciation of such morsels of time as can be spared from ordinary pursuits. My apprenticeship, like that of many others, was my drill, harsh, no doubt, but it is difficult to see how, without some kind of vigorous training, youth is to grow into manhood with a proper conception of a number of commonplace but important obligations. Certainly, old injunctions say as much.

My heaviest grievance was the delivery of those odious piles of lottery circulars, a species of labor that in no shape advanced my professional knowledge. To what hand, however, could I turn to rid myself of this slavery? The choice lay between suffering and ruin. It was my safest course to submit. Over the doorway of an old house in West Bow, which I passed several times daily, was the inscription, carved in stone,

"HE THAT THOLES OVERCOMES."

I made up my mind to *thole*,—a pithy old Scottish word signifying to bear with patience; the whole inscription reminding us of a sentiment in Virgil: "Whatever may happen, every kind of fortune is to be overcome by bearing it."*

After all, the drudgery I had in connection with the lotteries is not utterly to be condemned. It afforded an amusing insight into the

* "Quidquid erit, superanda omnis fortuna ferendo est."—*Æneid*, v.

weakness of human nature. I could scarcely have learned what I did by sitting with composure in the lap of ease and luxury. As regards the state lottery, it is interesting for me to remember that I was once a humble minister in that gigantic national concern. And what a queer, struggling, whimsical set of people came under notice! Some would buy only odd numbers of five figures, such as 17,359; some eagerly sought for numbers which they had dreamt of being prizes, and would have no other; some brought children to select a number from the quantity offered,—a degree of weakness which was outdone by those who superstitiously brought the seventh son of a seventh son to make the selection for them; some, more whimsical still, would only purchase at the last moment what every body else had rejected. Few were so extravagant as to buy whole tickets, or even halves, quarters, or eighths. The great majority contented themselves with a sixteenth, the price of which was usually about a guinea and a half; and as the fortunate holder of the sixteenth of a twenty-thousand-pound prize would realize above twelve hundred pounds, the temptation to this species of gambling was enormous.

It would be an error to imagine that the dispersion of those myriads of lottery circulars in the obscurest quarters had no practical efficacy. The chief buyers of sixteenths were persons connected with the markets, hackney-coachmen, waiters at hotels, female housekeepers, small tradesmen, and those of limited means generally, who hoped to become rich by a happy turn of the wheel. Inmates of the Sanctuary of Holyrood and the debtors' prisons were numbered among the steady customers of the state lottery. Both, therefore, as a messenger with lottery intelligence, and as an errand-boy with parcels of books, I had frequent occasion to visit and become less or more acquainted with these places.

The Sanctuary, which embraced a cluster of decayed buildings in front and on both sides of Holyrood Palace, was at that time more resorted to by refugee debtors than it is in this improved age. It was seldom without distinguished characters from England; some of them gaunt, oldish gentlemen, seemingly broken down men of fashion, wearing big gold spectacles, who now drew out existence here in defiance of creditors. To this august class of persons, who stood in need of supplies of books from the circulating library, I paid frequent visits; and conscious, perhaps, that they gave me some extra trouble, they were so considerate as to present me with an occasional sixpence, which I could not politely refuse.

Customers in the Canongate jail, and in the old Tolbooth, renowned as the "Heart of Mid-Lothian," were less munificent, but considerably more hearty in their intercourse. The greater number of them were third-rate shop-keepers, who, after struggling for years against debts, rents, and taxes, had finally succumbed to the sheriff-officer, and been drifted to a safe anchorage, which they did not seem

to think particularly unpleasant. The law had done its worst upon them, and for a time they were at rest.

The chief of these prisons, the Old Tolbooth, was a tall, black building in the High street, noted in the national annals: That Tolbooth on the lofty pinnacle of which was ignominiously stuck the head of the gallant Marquis of Montrose, in 1650, and whence, after bleaching for ten years, it was taken down and replaced by the head of the Marquis of Argyll; that Tolbooth which Byron has referred to with unjustifiable bitterness in his "English Bards and Scotch Reviewers,"—

> "Arthur's steep summit nodded to its base,
> The surly Tolbooth scarcely kept her place.
> The Tolbooth felt—for marble sometimes can,
> On such occasions, full as much as man,
> The Tolbooth felt defrauded of her charms,
> If Jeffrey died except within her arms."

After undergoing various mutations, this gloomy structure now served the double purpose of a jail for debtors and criminals. The two departments were quite distinct, the apartments for criminals being in the east end, and those for debtors being in the west. But all entered by the same door, that portal where the rioters of the Porteous Mob thundered in 1736. This doorway, situated at the foot of the south-eastern turret, was opened by a turnkey who was seated outside, or in a small adjoining vault on the ground-floor of the building. Level with it, facing the north, and occupying the remainder of the street-floor, was the office of the Town-guard, who were ready at hand in case of any emergency. Having gained an access by the outer portal of the Tolbooth, you ascended a flight of about twenty steps to an inner door, which was opened on the ringing of a bell by the outer turnkey. You were now in the Hall, a spacious apartment, with a sanded stone floor, and seats along the sides. It was well lighted by a large stanchioned window facing the south. Fixed on the wall nearly opposite the doorway, there was a black-board, on which was painted the following admonitory inscription, that is said to have been originally and specially designed for the King's Bench Prison:

> "A prison is a house of care,
> A place where none can thrive;
> A touchstone true to try a friend,
> A grave for men alive:—
> Sometimes a house of right,
> Sometimes a house of wrong,
> Sometimes a place for jades and thieves,
> And honest men among."

The hall was a common vestibule, whence an entrance was gained to the two departments. While the criminals were confined to their rooms in the East End, the prisoners under civil process, who were

lodged in the West End, moved about at pleasure during the day from the hall to the several apartments on two upper stories; and accordingly, for them there was almost the freedom of a lodging-house. The place of public execution was the flat roof of a low building attached to the western gable, and, to reach it, convicts were conducted across the hall.

My knowledge of this strange old jail needs a word of explanation. Among the debtors whom I visited in the way of business, there was one, a young man, who had been previously known to our family. Having failed in business under circumstances which led to an unusually long imprisonment, I frequently saw him, and was able to learn numerous particulars concerning the West-Enders and their ways of living, which would otherwise have been beyond my reach. As the Tolbooth was removed in 1817, it was my fortune to be its visitor during the last three years of its existence, and to become familiarized with a condition of things of which there is now no parallel. My experiences of Tolbooth life were in the days of free-and-easy prison arrangements. As yet, neither county prison boards nor prison inspectors had been heard of. The magistrates and council undertook the responsibility of cost and management, also appointed the officials, the chief of whom, honored with the designation of captain, was ordinarily some old citizen who stood well with the corporation. There was a simplicity about the whole system which is now difficult to be realized by any description. So far as the debtors were concerned, the prison was little else than a union of lodging-house and tavern, under lock and key. Acquaintances might call as often and stay as long as they pleased. The inmates and their visitors, if they felt inclined, could treat themselves to refreshments in a cozy little apartment, half-tavern, half-kitchen, superintended by a portly female, styled Lucky Laing, whence issued pretty frequently the pleasant sounds of broiling beefsteaks, and the drawings of corks from bottles of ale and porter.

Much of the cordiality that prevailed was due to the governor, Captain Sibbald, a benevolently disposed little man, with a merry twinkle in his eyes, dressed in a sober pepper-and-salt colored suit. I heard no end of his acts of kindness to debtors as well as criminals, or of putting poor youths in the way of well-doing who had passed through his hands. Although his salary was no more than a hundred and fifty pounds a year, he was known to take on himself the obligation of guaranteeing the payment of a debt, rather than retain in custody a poor man with a large family, brought to him for imprisonment. In the East End, he had almost constantly a male or female convict under sentence of death; and though not able to mitigate their unhappy doom, he always endeavored to assuage their present sufferings. Until his time, they had been literally fed on bread and water, during the six weeks that elapsed between sentence and execution. He generously broke through this harsh rule, not a

little to the dissatisfaction of the Lord Advocate of the day; but in the contest his humanity prevailed, and the rule was ever after practically relaxed. I heard it approvingly said of him, that at his own expense he procured a dentist to draw a tooth which so tortured a convict that he could not sleep; it was further reported that he always saw that the men were comfortably shaved on the morning of the day they were to be hanged, and that he uniformly pressed a glass of wine on the women on their being conducted through the hall to execution. Such was the gossip of the prison.

One of the strange things told of the Tolbooth is, that on various occasions it gave a secure retreat to persons who fled from justice. A gentleman alleged to have been concerned in the Rye-House Plot, in the reign of Charles II, and of whom the civil authorities were in search, received protection from a friend in the Tolbooth, where no one thought of looking for him; and whence he eventually escaped to the continent. In 1746, there was a similar case of protection to a gentleman who was sought after ineffectually, for his concern in the Rebellion.

I can realize the truth of these traditions, by having found a voluntary resident in the Tolbooth, who was not recognized as a prisoner, or as being there at all. This was a gifted but erratic genius, known by his familiar Christian name, Davie, who, after suffering a variety of disasters, received sympathy and succor among his friends in the West End. Of course, for this indulgence, he was indebted to the good-hearted governor, who, like his predecessors, did not find it to be consistent with his duty to be too particular. In making his last round at night, and ascending the spiral staircase, which was provided with a rope that performed the part of a hand-rail, he would considerately, as if by accident, jingle the bunch of well-worn keys, by way of announcing his approach. In casting a look around the apartment to see that all strangers were gone, and saying, "Good-night, gentlemen," he might have known, had he cared to know, that one of the inmates shared his bed with Davie, who was at that very moment—thanks to the jingle of the keys—ensconced upright in a tight-fitting wall-press at the corner of the apartment.

I had often occasion to meet and interchange courtesies with Davie, who was an essential adjunct of the prison fraternity. Having lost means, character, and friends, in the outer world, he was duly qualified by his obliging manners, his accomplishments, and his poverty, to be an acceptable guest of the West-Enders. The Tolbooth was his home by choice. He lived in it for years, seeing out successive groups of debtors, but always as much esteemed by the new-comers as by the older residents. How they could have done without him, it is painful to consider. He was a general factotum, went out and made purchases for them, carried messages to law-agents, posted letters, and, on great occasions, ordered in dinners from Mrs. Ferguson's, a noted tavern in the neighborhood. His jocularities, his singing, and

his ability to take a hand at whist, were of course recommendations of a high order. There were other reasons for thinking well of Davie. He was modest as regards his own wants. Debtors of the better class, on quitting the prison, would make him a present of a few articles of dress, and perhaps kindly leave half-a-crown in one of the pockets. Davie could not be said to have any regular meals. He lived principally on odd crusts of bread, pieces of biscuits, drams, and drops of ale or porter. Talking of drams, it was against rule to introduce spirits into the prison, but, through the agency of Davie, there never was any particular scarcity of the article. As a scout serviceable in this as in other things, he stood well with Peter, the keeper of the door in the hall, rather a good-humored Cerberus. Peter was blind of an eye, which some might think an advantage; he wore a woolen cap on his bald head, and always walked softly about the sanded stone floor in carpet-shoes.

The West End was two rooms in breadth, one entering from the other. The windows in these apartments looked only south and north, but the inmates had a device for extending the prospect in other directions. They had only to hold out a mirror beyond the stanchions to catch a glimpse of who was at the portal near the north-west corner of St. Giles, or of what was going on in the street. By means of this kind, they were able to see the remnant of the 42d regiment as it marched towards the castle on its return from Waterloo. The method of looking directly westward up the Lawnmarket was still more ingenious. In the gable of the building there was a hole or slit into which the beam of the gallows was inserted for public executions. So intruded, the beam projected about two feet into one of the debtors' apartments, where it made its appearance near the foot of the bed in which Davie participated. I remember paying a visit to the prison on the day after an execution, while it was still a subject of conversation. Confined to their rooms during the tragical ceremony, one of the debtors, along with Davie, I was told, had jocularly seated themselves on the inner end of the beam at the time the miserable culprit was in the course of being suspended from the other. The hole in the gable was already closed, but as executions, according to the heartless policy of the period, were then frequent, the building was performed in a superficial way. In the center of the masonry, a cork was introduced by particular request, and this being pulled out at pleasure, a view was obtained in the required direction, a convenience this of no small consequence to the West-Enders, which the obliging governor of the establishment did not notice or call in question.

Besides Davie, who became a naturalized inhabitant of the Tolbooth, there were other hangers-on in whose society the inmates found a degree of solace. For the greater part, the debtors were attempting to carry through the legal process of liberation known as the *cessio*, and accordingly required the assistance of law-practitioners.

Professional aid in these and other matters was usually rendered by a class of persons who it would be hazardous to say were on the roll of authorized attorneys. A kind of supernumeraries in the profession, and with a knowledge of forms, they hung about the prisons for jobs; modestly, as it were, keeping on the outskirts of society, in order to gather up the defiled crumbs which the notabilities of the law disdained to recognize. For the services which they rendered to the poorer order of clients, it is not clear that payment was made in coin. Seemingly, they had the run of the prison. When half-a-mutchkin was smuggled in through Davie's valuable assistance, they came in for a tasting, and at various hours of the day, not being particular as to time of luncheon, they held deeply interesting conferences in Lucky Laing's tavern over smoking dishes of steaks and creaming tumblers of porter. Talking plentifully between mouthfuls, and winking knowingly with one eye, they held out such sanguine hopes of getting things carried through cheaply—no expense to speak of but the office fees—as could not fail to raise the drooping spirits of the poor wives who came to hold council with their imprisoned husbands.

The law agents of this stamp who frequented the West End had for coadjutor a medical practitioner, not less necessary than themselves in carrying on operations. I am not aware that in the present day the doctor who haunted the Tolbooth has any distinct representative. He had at one time occupied a respectable position as a medical practitioner, but now, broken down by intemperance, he confined his professional services to the inmates of the West End, to whom he made himself presentable by blacking the white edges of his button-molds with ink, and keeping a band of faded crape on his hat, as if always in deep mourning. It was fortunate for the doctor that the law had considerately instituted the *cessio*. He lived upon it. Without it there was no visible refuge but the work-house. His function consisted in granting sick certificates; fee, five shillings, with a dram, as a matter of course, and a biscuit to give the refection an air of respectability. In virtue of a certificate of this nature, fortified by a warrant from the court, the ailing debtor was allowed to go home to his sorrowing family, and his prescribed thirty days' imprisonment became a sort of legal fiction. At all events, the law was satisfied, which was what the West-Enders alone cared for. I lost sight of the doctor after the Tolbooth was pulled down in 1817. He then disappeared from the visible creation, as a result of one of the many statutory enactments that have latterly rubbed out our social eccentricities.

As an old eddy corner of the world's tumultuous current, into which light floating wreck was naturally swept, the Old Tolbooth, with its scenes of grief and drollery, might not be supposed to be quite an appropriate resort for a lad who had to make his way in the sober track of life. All I can summon to remembrance in the matter is, that I here incidentally saw down into the depths of society,

to which the affluent classes have little opportunity of penetrating. My experiences among the shifty sub-middle classes, here as elsewhere, proved by no means the least valuable part of my training for the career into which I was ultimately drifted. Nor has the recollection of the Old Tolbooth and its inmates ever ceased to afford a fund of entertainment. In the Memoirs of a celebrated duchess, we are favored with the contrast which Her Grace draws between her present grand dull routine of existence, and the times long past, when, skirmishing with pecuniary difficulties, she pursued the life of an actress—her preference being decidedly given for "lang syne," with its sparkling wit, glee, and poverty, unburdened with the vapid solemnities of etiquette. The duchess, however, had no wish to return to these delightful early pursuits.

I made such attempts as were at all practicable, while an apprentice, to remedy the defects of my education at school. Nothing in that way could be done in the shop, for there reading was proscribed. But allowed to take home a book for study, I gladly availed myself of the privilege. The mornings in summer, when light cost nothing, were my chief reliance. Fatigued with trudging about, I was not naturally inclined to rise, but on this and some other points I overruled the will, and forced myself to get up at five o'clock, and have a spell at reading until it was time to think of moving off; my brother, when he was with me, doing the same. In this way I made some progress in French, with the pronunciation of which I was already familiar from the speech of the French prisoners of war at Peebles. I likewise dipped into several books of solid worth, such as Smith's "Wealth of Nations," Locke's "Human Understanding," Paley's "Moral Philosophy," and Blair's "Belles-Lettres,"—fixing the leading facts and theories in my memory by a note-book for the purpose. In another book, I kept for years an accurate account of my expenses, not allowing a single half-penny to escape record.

In the winter of 1815–16, when the cold and cost of candle-light would have detained me in bed, I was so fortunate as to discover an agreeable means of spending my mornings. The sale of lottery tickets, I have said, formed a branch of my employer's business. Besides distributing the lottery circulars, it fell to my lot to paste all the large show-boards with posters of glaring colors, bearing the words "Lucky Office," "Twenty Thousand Pounds still in the Wheel," and such-like seductive announcements. The board-carriers—shilling-a-day men—were usually a broken-down set of characters; as, for example, old waiters and footmen, with pale, flabby faces and purple noses; discharged soldiers, who had returned in a shattered condition from the wars; and tattered operatives of middle age, ruined by dram-drinking.

Among the last-named class of board-carriers, there was a journeyman baker who had an eye irretrievably damaged by some rough, but possibly not unprovoked, usage in a king's birthday riot. What from

the bad eye, and what from whisky, this unfortunate being had fallen out of regular employment. Now and then when there was a push in the trade, as at the New Year, he got a day's work from his old employer, a baker in Canal street. He was not at all nice as to occupation: he would deliver handbills, perambulate the streets with a lottery-board at the top of a pole over his shoulder, or any thing else that cast up, only he needed a little watching, for, when out on a job with the relics of the previous day's shilling in his pocket, he was prone to thirstiness in passing a dram-shop, into which he would dive, board and all, regardless of consequences.

From this hopeful personage, whom it was my duty to look after, I one day had a proposition, which he had been charged to communicate. If I pleased, he would introduce me to his occasional employer, the baker in Canal street, who, he said, was passionately fond of reading, but without leisure for its gratification. If I would go early, very early, say five o'clock in the morning, and read aloud to him and his two sons, while they were preparing their batch, I should be regularly rewarded for my trouble with a penny roll newly drawn from the oven. Hot rolls, as I have since learned, are not to be recommended for the stomach, but I could not in these times afford to be punctilious. The proposal was too captivating to be resisted.

Behold me, then, quitting my lodgings in the West Port, before five o'clock in the winter mornings, and pursuing my way across the town to the cluster of sunk streets below the North Bridge, of which Canal street was the principal. The scene of operations was a cellar of confined dimensions, reached by a flight of steps descending from the street, and possessing a small back window immediately beyond the baker's kneading board. Seated on a folded-up sack in the sole of the window, with a book in one hand and a penny candle stuck in a bottle near the other, I went to work for the amusement of the company. The baker was not particular as to subject. All he stipulated for was something droll and laughable. Aware of his tastes, I tried him first with the jocularities of "Roderick Random," which was a great success, and produced shouts of laughter. I followed this up with other works of Smollet, also with the novels of Fielding, and with "Gil Blas;" the tricks and grotesque rogueries in this last-mentioned work of fiction giving the baker and his two sons unqualified satisfaction. My services as a reader for two and a half hours every morning were unfailingly recompensed by a donation of the anticipated roll, with which, after getting myself brushed of the flour, I went on my way to shop-opening, lamp-cleaning, and all the rest of it, at Calton street. It would be vain in the present day to try to discover the baker's workshop, where these morning performances took place, for the whole of the buildings in this quarter have been removed to make way for the North British Railway station.

Such, with minor variations, was my mode of life for several years—an almost ceaseless drudgery. At that period there were no public

institutions of a popular kind to stimulate and regulate plans of self-culture. The School of Arts, the precursor of mechanics' institutions, was not set on foot until 1821. Young persons in humble circumstances were still left to grope their way. They might spend their spare hours in study, if they had a mind; nobody cared any thing at all about it. Neither were young men, by the usages of business, allowed any time to carry out fancies as to mental improvement. Shop-hours extended from half-past seven o'clock in the morning till nine at night, with no abatement on Saturdays. Notions of mere amusement I did not dare to entertain. The Theater Royal had its attractions, but expense, if nothing else, stood in the way. I had as yet been only once in the theater. A friend of our family had treated me to the shilling-gallery, shortly after coming to Edinburgh; it was to see John Kemble, who played Rollo, a subject of absorbing interest, and not for a number of years afterwards could I venture on any species of theatrical indulgence. In gracefully submitting to this self-denial perhaps I had no great merit. So far as spare time was concerned, my mind had become occupied not only in the morning readings and study, but in sundry scientific experiments, to which I was led by James King, who was an apprentice to a seedsman next door.

King was two or three years my senior, and I looked up to him on that account as well as for his general ability. He came from Fife, which is noted for the saliency and genius of its people. Our proximity to each other, and similarity of tastes, brought us into acquaintance. He had a younger brother, George, an apprentice to Mr. Crombie, a well-known dyer, with whom I also became acquainted; and when my brother Robert came to town to lodge with me, he was introduced to the circle. We formed, so to speak, a club of four lads, devoted to some species of scientific inquiry and recreation. The Kings were great upon chemistry. Their talk was of retorts, alkalies, acids, combustion, and oxygen gas, all which gave me a favorable opinion of their learning. They likewise spoke so familiarly of electricity, Leyden jars, and the galvanic pile, as to excite in me a desire to know something of these marvels. Chemistry and electricity became accordingly the subject of discussion and experiment; but the difficulty was to know where experiments could be conducted. My lodgings were out of the question. So were those of the Kings. They lived in a garret, situated immediately behind the well on the south side of the Grassmarket, which it was inexpedient to constitute a hall of science, and the notion of resorting to it was given up. In this dilemma, a friendly and every way suitable retreat, which remains vividly in my recollections, presented itself, and was gratefully accepted.

As you go up a narrow and steep road to the Calton Hill, at the foot of Leith street, a covered passage descends and strikes off to the left, and conducts you to a confined court, wherein stood, and, per-

haps, still stands, a small cottage with a tiled roof, that had to all appearance existed long before the streets with which it was environed. The back window in Calton street, where I used to clean the lamps, looked into the court, and I could notice that the little old-fashioned cottage was occupied by a thin and aged personage with a bright brown scratch wig, who, in fine weather, made his appearance on the pavement as a common street porter. The name by which he was known in the neighborhood was Jamie Alexander. As voucher for his respectability, he wore on the left breast of his coat a pewter badge, marked No. 3, indicative of the early period at which he had been enrolled by the magistrates in the fraternity of porters; and of this antiquity of his emblem of office he felt naturally proud; all other porters, however old, being boys in comparison, and not possessing that distinction of rank which he did.

Jamie was a Highlander by birth, and in his youth, long ago, had been a servant to a Mr. Tytler, a gentleman of literary and scientific attainments, with whom he had traveled and seen the world, and in whose company he had picked up a smattering of learned ideas and words. With this grounding, and naturally handy, Jamie was a kind of Jack-of-all trades. It was in his capacity of porter that King and I had become acquainted with him, but at his advanced age he relied more distinctly on less toilsome pursuits. The versatility of his talents rendered him peculiarly acceptable as an acquaintance, and his house was well adapted for our meetings. This ancient mansion consisted of only a single apartment; it was kitchen, parlor, bedroom, and workshop all in one, a queer and incongruous jumble, like the mind of the occupant.

Usually, at night, we found Jamie seated at one side of his fire, and his wife Janet, a more commonplace character, at the other. Behind the old man was his work-bench, loaded with a variety of tools and odds and ends adapted to a leading branch of employment, which consisted in clasping broken china and crystal for the stoneware shops. This operation he performed with a neatness that surprised most persons, who knew that he had lost the sight of one of his eyes. It did not seem to be generally understood that Jamie had a contrivance satisfactory to himself for remedying this ocular deficiency. In his old pair of spectacles he fixed two glasses for the seeing eye, and he maintained that by this arrangement of a double lens, his single eye was as good to him as two, a point we did not think fit to contest.

To vary the routine of employment, and at the same time enjoy a little out-door recreation, Jamie at times took a job from the undertakers. Dressed in a thread-bare black suit, he walked as a *saulie* before the higher class of funerals, with his hat under his arm, and the black velvet cap of a running footman covering his brown wig. In connection with his profession of *saulie*, he related numerous traditionary anecdotes illustrative of the festivities of deceased *saulie*

and *gumfler* men in the servant's hall of great houses* while waiting in lugubrious habiliments to head the funeral solemnity, his stories reminding one of the interspersal of scenes of drollery throughout the tragedies of Shakespeare, and, I doubt not, true to nature. Besides these diverting reminiscences of grand funerals, he gave his experiences of grave-digging in the Calton burying-ground, where he often assisted. He confidently stated that the digging of graves was a wonderfully exhilarating and healthful occupation, if executed with proper skill and leisure. Nothing, in his opinion, was so efficacious in assuaging a rheumatism in the back, or securing long life; and to hear him on this subject, you would have thought it would be a good thing in the way of health and amusement to take to regular exercise in grave-digging. It appeared that independently of payment for this kind of labor according to tariff, Jamie seldom left the ground without a few bits of old coffin in good condition, which had been thrown to the surface in the course of excavation. Such pieces of wood, improved by seasoning in the earth, he said, excelled for some purposes of art. From them he made a common kind of fiddles, and also cheap wooden clocks.

With much oddity of character, there was a fine spirit of industry, cheerfulness, and contentment in the old man. As a Highlander, he spoke Gaelic, and from him I learned to be tolerably proficient in pronouncing that test in the language, *laogh*, the word for *calf*. With a love of the ancient music of the hills, he played the bagpipe, but this instrument, from deficiency of breath, he had latterly laid aside, and taken to the Irish pipes, which are played by means of bellows under the arm. His pipes lay conveniently on a shelf over his work-bench, and taking them down, he, at our request, would favor us with a pibroch. Having finished the tune, he ordinarily delivered some oracular remarks on pipe-music in general, and of the operatic character of the pibroch in particular, the only time, by the way, I ever heard the thing explained.

Janet, the mistress of the mansion, did not greatly encourage our visits. Her chief concern in life seemed to consist in nursing a small and ingeniously made-up fire, which was apt to be seriously deranged by King's chemical experiments, such as the production of coal-gas in a blacking-bottle, used by way of retort,—the proposal of lighting the city with gas having suggested this novel experiment. For a special reason, this old woman was not more favorable to electric science. Under King's advice and directions, my brother and I contrived, out of very poor resources, to procure a cylindrical electrifying machine, with some apparatus to correspond. Having one night given Janet an electric *shock*, slyly conveyed to her through a piece

* Mutes bearing tall poles shrouded in black drapery are called in Scotland *gumfler* men; such being a corruption of *gonfalonier*, the bearer of a *gonfalon*, or standard, in old ceremonial procession.

of damp tobacco, she ever after viewed the machine with the darkest suspicions. In these apprehensions her gray cat had some reason to join; when the Leyden jars were placed on the table, she fled to the roof of the bed, and there kept eying us during our mysterious incantations.

Sunday, with its blessed exemption from a dull round of duties, came weekly with its soothing influences; and this leads to a little explanation. If any one is so complimentary as to think that I had some merit in devising how to live on so low a figure as a shilling and ninepence a week, he may be disposed to modify his surprise on my stating that the expenditure did not include Sunday, so that, after all, the one-and-ninepence weekly inferred as much as threepence-halfpenny a day. For several years, I walked home to the country every Saturday night. Between nine and ten o'clock, in all states of the weather, summer and winter, I might have been found making the best of my way down the North Back of the Canongate, past Holyrood, across the King's Park by Muschet's Cairn, and so on through Portobello. It was necessary not to loiter by the way, for, with a somewhat limited wardrobe, a few things which I carried with me had to be washed and otherwise prepared before midnight. In these night-travels my brother Robert, while he remained in town, accompanied me.

The Sundays spent on the shore of the Firth of Forth formed a refreshing change on the ordinary course of life. The salt-pans had ceased to send up their nauseous vapors and clouds of smoke. A pleasant and not uninstructive calm was experienced amidst the shell and tangle covered rocks, against which the pellucid waves of the sea dashed in unremitting murmurs. Usually, I went to Inveresk Church with other members of the family, and so became acquainted with Musselburg and its environs. Sometimes I walked by a footpath across the fields by Brunstain and Millerhill to Dalkeith, to visit my grandmother, Mrs. Noble, and her younger son David, who had recently been settled there (Robert, the elder son, having gone to Nova Scotia), and enjoyed the variety of accompanying them to the antique parish church of that pretty country town.

There was an immense charm in these occasional Sabbath-day walks to Dalkeith, in which I usually carried a French New Testament in my pocket for lingual exercise. The sunshine, the calm that prevailed, the fresh air, the singing of birds, the green leafy trees, and the blossoming wild-flowers by the wayside, all filled my heart with gladness, for they renewed my recollections of the country. The fields, stuck about with coal-pits, at which the gin-horses had intermitted their accustomed toil, were not such pretty fields as I had seen on Tweedside; still they were environed with hedgerows, and formed a pleasing contrast to the huge rows of dingy buildings among which I pursued my ordinary employment. As a boy, I had passionately cultivated flowers in a little garden assigned to me, and now

rejoiced to see a few growing by the side of the pathway. The Mid-Lothian primroses, I imagined—considering the neighborhood of the coal-pits—had not the freshness and bloom of the primroses which I had gathered in the woods and dells at Neidpath; but still they were primroses, and, as the best within reach, I plucked and carried home a handful as a gift to my mother in her dreary residence at the Pans, and was pleased to see her put them in a glass with a little water, to preserve as a souvenir of my weekly visit.

The small smoked-dried community at these salt-pans was socially interesting. Along with the colliers in the neighboring tiled hamlets, the salt-makers—at least the elderly among them—had at one time been serfs, and in that condition they had been legally sold along with the property on which they dwelt. I conversed with some of them on the subject. They and their children had been heritable fixtures to the spot. They could neither leave at will nor change their profession. In short, they were in a sense slaves. I feel it to be curious that I should have seen and spoken to persons in this country who remembered being legally in a state of serfdom; and such they were until the year 1799, when an act of parliament abolished this last remnant of slavery in the British Islands. Appreciating the event, they set aside one day in the year as a festival commemorative of their liberation. Perhaps the custom of celebrating the day still exists.

After these Sunday communings with the family, I was on Monday morning off again for Edinburgh to have a fresh tug at the shop-shutters, carrying away with me, I need hardly say, all kinds of admonitory hints from my mother, the burden of her recommendations being to avoid low companions, to mind whom I was come of, and "aye to haud forrit." What was to become of me was, as she said, a perfect mystery; still there was nothing like securing a good character in the mean while—that was clear, at all events.

My mother, however, had more cause for uneasiness on her own than my account. The aspect of family affairs was acquiring additional gloom. My father was not the man for the situation he filled. In fact he detested situations of all kinds. His rough and irritable spirit of independence gave him a dislike to be ordered by any body. His feelings at this period were in a morbid condition, the result of circumstances already adverted to, and therefore not to be judged severely. Having unfortunately failed in the means of acting an independent part, he was perhaps on that account the more anxious that his sons should be successful in making the attempt. At any rate, he endeavored to impress on me the vast necessity and advantage of, in all things, thinking for myself, and taking, as far as possible, an independent course. He objected to my ever entertaining the notion of continuing to serve any one after my apprenticeship had expired. No amount of salary was to tempt me; no prospect of ease to seduce me. I should strike out for myself, if it were only to

sell books in a basket from door to door. There might be suffering and humiliation in the mean time; but I would be daily gaining experience, and, with prudence, accumulating means. If I behaved myself properly, a few years would set all to rights.

These disquisitions amused and probably had some effect in inspiring me. My father had strong convictions as to the propriety of allowing children to think and struggle for themselves; such, in his opinion, being true kindness, and any thing else little better than cruelty. Seated in his arm-chair at the Pans, with two or three of us about him, he would discourse in this pleasant way, interlarding anecdote with philosophy.

"You think it a hard business, I dare say,"—addressing me,—"to live in your present pinching way, scheming as to buying meal and milk, and all that; but it is doing you an immense deal of good. It is strengthening your mind, and teaching you the art of thinking, that is the great point. You should be thankful for my not doing any thing for you. Perhaps you would like to have every thing held up to you—lodgings, tailors' bills, boots, and what not, all paid for the asking. What would be the upshot? You would never know the value of money. You would grow up as ignorant and dependent as a child, and never be able to take a front rank in the world. It is melancholy to see so many fathers spoiling their children from mistaken notions of kindness. Young men treated in that foolish way can do nothing for themselves, but must have somebody always behind them to shove them into situations, where their minds lose all power of thinking and planning correctly. No doubt they can plan what they would like to have for dinner; few folk are ill at that, or about going to the theater, or what should be the color of their gloves. But that is not what I mean. What I am speaking of is the faculty of thinking and acting for yourself in all kinds of unexpected difficulty. I could tell you plenty of stories about inability to think or act independently. You remember the excise officer at Peebles, who for a number of years looked after Kerfield Brewery, a most excellent person, but not qualified to think for himself. His mind had been stunted for want of exercise. Stirred up by his wife, an ambitious little woman, with whom he had received some money, he inconsiderately threw up his situation, and purchased the effects of a deceased brewer at Galashiels, his object being to go into business for himself. When he came to look into matters, he was utterly at a loss. It was all simple enough, but the man had no power of planning. Besides putting things in repair, he had to buy grain and hops, order new barrels, purchase horses, and hire servants. For one thing, he had to open and read a hundred and thirty-nine letters applying for the situation of clerk. All this, along with other perplexities, drove him clean wild. He felt that he had got into an affair he could not go through with, and then, when he reflected upon the loss of his comfortable situation, and still worse the loss of his money, he be-

came seriously ill, and took to his bed. In these circumstances, his wife, greatly at a loss what to do, sent for our old friend Smibert, who was once Provost of Peebles, a man of extraordinary shrewdness. From his cleverness, we used to call him Talleyrand. When the poor sick man saw the old Provost make his appearance, he felt a wonderful degree of relief. The wife, sitting by the side of the bed, explained the scrape they had got into, and asked what should be done.

"'Done,' answered their visitor, leaning on his crooked-headed stick to save his lame leg; 'what's to be done but to sell off the whole concern, and try to get reinstated in the Excise?'

"'Very good,' said the wife; 'but how is the sale to be effected? it's easy speaking.'

"'Leave it all to me,' replied Smibert, briskly; 'I know how to manage: I'll advertise and take in offers.'

"The words had not been well spoken, when the sick man declared he found himself getting well, and that they might take the blister from the back of his neck. In a day or two he was quite recovered. Talleyrand arranged matters beautifully. He sold off the concern, though at a sacrifice to the owner, who after some trouble, got himself reinstated in the Excise; but he had to begin over again, and lost ten years on the books by his ridiculous attempt at independent exertion."

Such was the run of my father's disquisitions. Unfortunately, his extreme views of independence did not comport with his functions as manager of the salt-works, where he suffered a species of ignominious banishment. Among the near neighbors were a few excise officers set to watch over the works and give permits to purchasers. One of these officials was a Mr. Stobie, in whom there was a degree of interest; for, while in the position of an expectant of Excise, he had done duty for Robert Burns in his last illness, April, 1796, when, as the poet says in a letter to Thomson: "Ever since I wrote you last, I have only known existence by the pressure of the heavy hand of sickness, and have counted time by the repercussions of pain." It redounded to the honor of Stobie that he acted gratuitously for Burns at this melancholy crisis, and it was pleasing for our family to make his acquaintance, and hear some particulars of the greatest among Scottish poets.

Beyond such acquaintanceships, there was little to compensate for the smoke, dirt, and misery that were endured at the Pans. The business in itself violated all my fathers notions of propriety. It consisted almost wholly in supplying material for a contraband trade across the Border to England, the high duties on salt in the latter country rendering this a profitable traffic. Purchased in large quantities at Joppa and other salt-works, the bags were transferred in carts to Newcastleton in Liddesdale, where the article was stored by a dealer, and sold by him to be smuggled across the fells during the night. For years this was a great trade. Perhaps it did not pertain

to the Scotch salt-makers to urge the extinction of so flourishing a traffic, but neither could any one of susceptible feelings look on it with perfect complacency.

Whatever were the precise causes of discord, a disruption was precipitated by my father having the misfortune to be waylaid and robbed of some money which he had collected in the way of business in Edinburgh. Knocked down and grievously bruised about the head, he was found late at night lying helpless on the road, and brought home by some good Samaritan. The painful circumstances connected with this untoward affair led to his being discharged from his office. In his now hapless state, greatly disabled by the injuries which he had received, and without means, the consideration of every thing fell on my mother. Her mind rose to the occasion. Removing from the sooty precinct to one of a row of houses near Magdalene Bridge, on the road to Musselburgh, she prepared to set on foot a small business, and was not without hope of meeting with general sympathy and support, for by her agreeable manners and exemplary conduct under various difficulties, she had made some good friends of different classes in the neighborhood.

With something like dismay, I heard of the fresh disaster, the climax, it was to be hoped, of a series of agonizing misfortunes. The house at the Pans had been about the most revolting of human habitations, but it at least gave shelter, and bore with it some means of livelihood. Now, all that was at an end. The future was to be a matter of new contrivance. Of course, I hastened from town to condole over present distresses, and share in the family counsels. On my unexpected arrival near midnight, cold, wet, and wayworn, all was silent in that poor home. In darkness, by my mother's bedside, I talked with her of the scheme she had projected. It was little I could do. Some insignificant savings were at her disposal, and so was a windfall over which I had cause for rejoicing. By a singular piece of good fortune, I had the previous day been presented with half a guinea by a good-hearted tradesman, on being sent to him with the agreeable intelligence that he had got the sixteenth of a twenty thousand pound prize in the state lottery. The little bit of gold was put into my mother's hand. With emotion too great for words, my own hand was pressed gratefully in return. The loving pressure of that unseen hand in the midnight gloom, has it not proved more than the ordinary blessing of a mother on her son?

> "All this, still legible in memory's page,
> And still to be so to my latest age,
> Adds joy to duty, makes me glad to pay
> Such honors to thee as my numbers may;
> Perhaps a frail memorial, but sincere—
> Not scorned in heaven, though little noticed here."
>
> COWPER.

Early in the following morning I was back to business in Calton street. My mother's ingenious efforts, conducted with consummate tact, and wholly regardless of toil, were successful. Her only embarrassment was my father, prematurely broken down in body and mind. It is not the purpose, however, of the present memoir to pursue the family history. Let us revert to the leading object in hand.

ROBERT'S EARLY DIFFICULTIES—1814 TO 1819.

It will be necessary to go back a little, in order to trace the difficulties that were encountered by Robert in the early part of his career, while I was still following out the duties of an apprentice.

The family depression during this gloomy period was felt more acutely by my brother than by myself, for, besides being more susceptible in feelings, he was, from his gentle and retiring habits, less able to face the stern realities with which we were unitedly environed. Left, as has been said, for a time in Peebles to pursue his studies at the grammar-school, he was finally brought to Edinburgh, and placed at a noted classical academy,—that of Mr. Benjamin Mackay, in West Register street,—preparatory to being (if possible) sent to the university. There was an understanding in the family that, as the most suitable professional pursuit, he was to be prepared for the Church. The expenses attending on this course of education were considerably beyond present capabilities, but all was to be smoothed over by a bursary, of which a distant relative held out some vague expectations.

When the family quitted Edinburgh, Robert accompanied them, but shortly afterwards, with a considerable strain on finances, he was associated with me in my West Port lodgings. Here, from the uncongenial habits with which he was brought in contact, he felt considerably out of place. I was fortunately absent during the greater part of the day in my accustomed duties; but he, after school hours, had to rely on such refuge as could be found at the unattractive fireside of our landlady, who, though disposed to be kind in her way, was so chilled by habits of penury as to give little consideration for the feelings of the poor scholar. He spoke to me of his sufferings and the efforts he made to assuage them. The want of warmth was his principal discomfort. Sometimes, benumbed with cold, he was glad to adjourn to that ever hospitable retreat, the Old Tolbooth, where, like myself, he was received as a welcome visitor by the West-Enders; and it is not unworthy of being mentioned, that the oddities of character among these unfortunate, though on the whole joyous, prisoners, and their professional associates,—not forgetting Davie,—formed a fund of recollection on which he afterwards drew for literary purposes. That strange old prison, with its homely arrangements, was therefore to him, as to me, identified with early associations,—

a thing the remembrance of which became to both a subject of life-long amusement. There was also some exhilaration for him in occasionally attending the nightly book-auctions, where, favored with light and warmth, seated in a by-corner, he could study his lessons, as well as derive a degree of entertainment from the scene which was presented. A further source of evening recreation, but not till past nine o'clock, and then only for an hour, was found in those meetings with the brothers King and myself for mutual scientific instruction.

Viewed apart from these solacements, his life was dreary in the extreme. Half-starved, unsympathized with, and looking for no comfort at home, he probably would have lost heart but for the daily exercises at school, where he stood as rival and class-fellow of Mackay's best pupils. A good Latinist considering his years, and appreciative of wit and humor, he had an immense love of the odes and satires of Horace, nor was he scarcely a less admirer of the classic myths of Virgil, for they touched on that cord of romance and legendary lore which vibrated in his own mental constitution.

Ever since his arrival in Edinburgh, and without suggestion from any one, he had taken delight in exploring, at fitting times, what was ancient and historically interesting in the Old Town, which, for tastes of this kind, presents a peculiarly comprehensive field of inquiry. Once crowded within defensive walls, the older part of the city remained a dense cluster of tall, dark buildings, lining the central street and diverging lanes, or *closes*, with comparatively little change in exterior aspect. However altered as regards the quality of the dwellers on the different floors, the tenements still exhibited innumerable artistic and heraldic tokens of the past; nor were the environs of the town less illustrative of moving incidents of the olden time. To this huge antiquarian preserve, as it might be called, with its varied legends, my brother immediately attached himself with the fervor of a first love, for so enduring was it as materially to tinge the rest of his existence.

Patiently ranging up one close and down another, ascending stairs, and poking into obscure courts, he took note of carvings over doorways, pondered on the structure of old gables and windows, examined *risps*—the antique mechanism which had answered the purpose of door-knockers—and extending the scope of his researches, scarcely a bit of Arthur's Seat or the Braid Hills was left unexplored. The Borough-moor, where James the Fourth marshaled his army before marching to the fatal field of Flodden; the "bore-stone," in which, on that occasion, was planted the royal standard,—

> "The staff, a pine-tree, strong and straight,
> Pitched deeply in a massive stone,
> Which still in memory is shown,
> Yet bent beneath the standard's weight

Whene'er the western wind unrolled,
With toil, the huge and cumbrous fold,
And gave to view the dazzling field,
Where in proud Scotland's royal shield,
The ruddy lion ramped in gold."—*Marmion.*

Royston, where the Earl of Hertford landed with an English army, and proceeded to set fire to and destroy Edinburgh; the spot at the Kirk of Field, where Darnley was blown up; the tomb of the Earl of Murray; the grassy mounds in Bruntsfield Links, which formed the relics of Cromwell's batteries when besieging the castle after the victory of Dunbar; the grave-stone in the Grayfriars Churchyard, on which, in 1638, was signed the National Covenant; the adjoining inclosure, in which, for a time, were pent up, like cattle, the cowd of prisoners taken at the battle of Bothwell Bridge; the closed-up postern of the castle surmounting the precipitous rocks up which Claverhouse, Viscount Dundee, clambered to confer with the governor (and how he got either up or down no one can tell), when setting out for his last field, Killiecrankie; these, and such like historical memorials, became all familiar to my brother by making good use of intervals that could be spared from his daily attendance at the academy.

Though only twelve months had elapsed since he came from the country, and not yet fourteen years of age, he already possessed a knowledge of things concerning the old city and its romantic history which many, it may be supposed, do not acquire in the course of a lifetime. While most other youths, his school-mates, gave themselves up to amusements not unbecoming for their age, his recreations had all in them something of the nature of instruction. And such were his extraordinary powers of memory, that whatever he saw or learned, he never forgot; every thing which could interest the mind being treasured up as a fund of delightful recollections, ready to be of service when wanted.

At the academy were a few boys, the sons of citizens, who indulged in fancies not unlike his own, and with whom he formed a lasting friendship. They could tell legendary stories of marvelous events in the city annals, connected with reputed wizzards, noted eccentric characters, and remarkable criminals, to which he listened with avidity; as, for example, the story of Major Weir, who, for the commission of a series of attrocities, was condemned and executed in 1670, and whose house in the West Bow enjoyed the reputation of being so much under the dominion of evil spirits, that no person would live in it for more than a hundred years afterwards; for when any family made the attempt, they were subject to such an extraordinary illusion of the senses, that in going up the stair they felt as if they were going down, and when going down, that they were going up. Or the story of Deacon Brodie, a man moving in a good position, who, having long secretly carried on a system of depredations, was ultimately condemned and executed for committing a burglary

on the Excise Office, 1788. Or the still more curious story of a lad who, while under sentence of death in the Old Tolbooth, escaped by a clever device of his father, and lay for weeks concealed in the mausoleum of the "Bluidy Mackenyie," where he was secretly supplied with food by the boys of Heriot's Hospital, till he escaped from the country. Or what remained still a matter of public horror and wonderment, the assassination and robbery of Begbie, a bank porter, in 1806, the perpetrator of which double crime had never been discovered, notwithstanding all the efforts of the authorities.

By these varied means in his early youth, in the midst of difficulties, Robert laid the foundation of much that afterwards assumed shape in literature, although at the time he was only satisfying a natural craving for what was traditionally curious. Looking back to the days when we lived together in the West Port, I can not recollect that he ever spent a moment in what was purely amusing, or of no practical avail. Nor was this a sacrifice. The acquisition of knowledge was with him the highest of earthly enjoyments. It was well for him that he had these soothing resources. What his trials were at this time may be learned from the following passages in a letter written by him, in 1829, to the young lady to whom he was shortly afterwards married:

"My brother William and I lived in lodgings together. Our room and bed cost three shillings a week. It was in the West Port, near Burke's place. I can not understand how I should ever have lived in it. The woman who kept the lodgings was a Peebles woman, who knew and wished to be kind to us. She was, however, of a very narrow disposition, partly the result of poverty. I used to be in great distress for want of fire. I could not afford either that or candle myself. So I have often sat beside her kitchen fire, if fire it could be called, which was only a little heap of embers, reading Horace and conning my dictionary by a light which required me to hold the books almost close to the grate. What a miserable winter that was! Yet I can not help feeling proud of my trials at that time. My brother and I—he then between fifteen and sixteen, I between thirteen and fourteen—had made a resolution together that we would exercise the last degree of self-denial. My brother actually saved money off his income. I remember seeing him take five-and-twenty shillings out of a closed box which he kept to receive his savings; and that was the spare money of only a twelvemonth. I dare say the Potterrow itself never sheltered two divinity students of such abstinent habits as ours. My father's prospects blackened towards the end of the winter; and even the small cost of my board and lodging at length became too much for him. I then for some time spent the night at Joppa Pans, and regularly every morning walked, lame as I was, to Edinburgh to attend school. Through all these distresses, I preserved the best of health, though perhaps my long fasts at so critical a period of life repressed my growth. A darker period

than even this ensued; my father lost his situation, and I was withdrawn from a course of learning which it was seen I should never be able to complete."

Such is a fair account of the termination of Robert's educational career. Of course there was mourning over the ruin of long-cherished hopes, and yet the circumstance ought in reality to have been a cause for rejoicing. I greatly doubt if my brother would, according to ordinary expectations, ever have excelled as a clergyman. He was deficient in oratorical qualities, nor did he possess to a sufficient degree that self-possession which is indispensable to a successful public speaker. Nature had destined him to wield the pen, not to live by exercise of the tongue. In the mean while, he was greatly downcast. Returning home, his privations were now greater than my own, for they were aggravated by the spectacle of domestic troubles, from which, except at weekly intervals, I was happily exempt.

Depressed, and it might be said friendless, with only his Horace and a few other Latin books, over which he would pore lovingly for hours, he was at this painful juncture not unconscious that he should make some sort of effort at self-reliance. He could arrive at no other conviction. In the picturesque language of the Psalmist, his "kinsmen stood afar off," a circumstance which unhappily roused feelings much more bitter than any experienced in my own less delicately framed mental system.

For a brief space, he procured a little private teaching at Portobello. Afterwards, a place was procured for him in the counting-house of a merchant, who resided in Pilrig street, situated between Edinburgh and Leith; but this involved a journey on foot to and fro daily of altogether ten miles, with the poorest possible requital. At the end of six months this employment came to an end, and for a few weeks he filled a similar situation in Mitchell street, Leith. "From that place," he says in the letter above referred to, "I was discharged, for no other reason that I can think of but that my employer thought me too stupid to be likely ever to do him any good. I was now in the miserable situation of a youth betwixt fifteen and sixteen, who, having passed the proper period without acquiring the groundwork of a profession, is totally *hors de combat*, and has the prospect of evermore continuing so. I was now, however, at the bottom of the wheel. Now came the time to rise. You have already some notion of my self-denial and fortitude of mind. Now came the time to exert all my faculties." He then alludes to circumstances of which I am able to give a more explicit detail.

At this dismal period, when, as he says, he was "at the bottom of the wheel," I saw him only on Sundays, and it was on such occasions alone that we had an opportunity for private consultation. On one of these Sabbath evenings, we sat down together in deep cogitation, on a grassy knoll overlooking the Firth and the distant shores of Fife. The scene, placid and beautiful, befitting the calm which

seemed appropriate to the day of rest, assorted ill with the pressure of those personal necessities that demanded immediate and far from pleasant consideration. Jeremy Taylor has consolingly remarked, that "there is no man but hath blessings enough in present possession to outweigh the evils of a great affliction." It may be so. I have no doubt it is so. How the blessings are to be recognized and brought into practical application is sometimes the difficulty. In Robert's case, the blessings might have been stated as consisting of youth, health, a fair education, moral and intellectual culture, and aspirations which embraced an earnest resolution to outweigh, by honest industry, the misfortunes into which he had been plunged by no fault of his own. Evidently all depended on his being put on the right path. The great question for solution was what he should do, not only for his own subsistence, but to disembarrass the family, in which he acutely felt himself to be in the light of an incumbrance.

This was the critical moment that determined my brother's career. I had for some days been pondering on a scheme which might possibly help him out of his difficulties, provided he laid aside all ideas of false shame, and unhesitatingly followed my directions. The project was desperate, but nothing short of desperate measures was available. My suggestion was that, abandoning all notions of securing employment as a clerk, teacher, or any thing else, and stifling every emotion which had hitherto buoyed him up, he should, in the humblest possible style, begin the business of a bookseller. The idea of such an enterprise had passed through his own mind, but had been laid aside as wild and ridiculous, for he possessed neither stock nor capital, nor could he have recourse to any one to lend him assistance. "I have thought of all that," I said, "and will show you how the thing is to be done." I now explained that in the family household there were still a number of old books, which had been dragged about from place to place, and were next to useless. The whole, if ranged on a shelf, would occupy about twelve feet, with perhaps a foot additional by including Horace and other school-books. They were certainly not much worth, but, if offered for sale, they might, as I imagined, form the foundation on which a business could be constructed. I added that there was at the time an opening for the sale of cheap pocket Bibles, respecting which I could aid by my knowledge of the trade, and even go the length of starting him with one or two copies out of my slender savings.

The project being turned over and over, and canvassed, proved acceptable. My father, so far from having any objections, assented to the scheme. The old books, Horace and all, were collected and carried off, the only one left being an old tattered black-letter Bible, of the date 1606, that had been in the family for two hundred years, and which, with scribblings on the blank pages, formed a kind of register of births, deaths, and marriages, during that lengthened period. Too sacred to be ruthlessly made an article of commerce,

it was fortunately reserved, and in due time became my only patrimony.

With the few old books so collected, Robert began business in 1818, when only sixteen years of age, from which time he became self-supporting, as I had been several years earlier. I should have hesitated to mention these particulars of my brother's early career, but for the fact of his having, in a letter to his friend, Hugh Miller, dated March 1, 1854, and published in the "Life and Letters" of that person (1871), given an account, which, as a candid revelation of his own feelings, is fully more painful.

Writing to Miller, he says: "Your autobiography has set me a-thinking of my own youthful days, which were like yours in point of hardship and humiliation, though different in many important circumstances. My being of the same age with you, to exactly a quarter of a year, brings the idea of a certain parity more forcibly upon me. The differences are as curious to me as the resemblances. Notwithstanding your wonderful success as a writer, I think my literary tendency must have been a deeper and more absorbing peculiarity than yours, seeing that I took to Latin and to books both keenly and exclusively, while you broke down in your classical course, and had fully as great a passion for rough sport and enterprise as for reading, that being again a passion of which I never had one particle. This has, however, resulted in making you what I never was inclined to be, a close observer of external nature, an immense advantage in your case. Still I think I could present against your hardy field observations by firth and fell, and cave and cliff, some striking analogies in the finding out and devouring of books, making my way, for instance, through a whole chestful of the 'Encyclopædia Britannica,' which I found in a lumber-garret. I must also say, that an unfortunate tenderness of feet, scarcely yet got over, had much to do in making me mainly a fireside student. As to domestic connections and conditions, mine, being of the middle classes, were superior to yours for the first twelve years. After that, my father being unfortunate in business, we were reduced to poverty, and came down to even humbler things than you experienced. I passed through some years of the direst hardship, not the least evil being a state of feeling quite unnatural in youth—a stern and burning defiance of a social world in which we were harshly and coldly treated by former friends, differing only in external respects from ourselves. In your life there is one crisis where I think your experiences must have been somewhat like mine: it is the brief period at Inverness. Some of your expressions there bring all my own early feelings again to life. A disparity between the internal consciousness of powers and accomplishments and the external ostensible aspect, led in me to the very same wrong methods of setting myself forward as in you. There, of course, I meet you in warm sympathy. I have sometimes thought of describing my bitter, painful youth to the world, as something in which it might

read a lesson; but the retrospect is still too distressing. I screen it from the mental eye. The one grand fact it has impressed is the very small amount of brotherly assistance there is for the unfortunate in this world. . . . Till I proved that I could help myself, no friend came to me. Uncles, cousins, etc., in good positions in life, some of them stoops of kirks, by-the-by, not one offered, or seemed inclined to give, the smallest assistance. The consequent defying, self-relying spirit in which, at sixteen, I set out as a bookseller, with only my own small collection of books as a stock, not worth more than two pounds, I believe, led to my being quickly independent of all aid; but it has not been all a gain, for I am now sensible that my spirit of self-reliance too often manifested itself in an unsocial, unamiable light, while my recollections of 'honest poverty' may have made me too eager to attain and secure worldly prosperity."

The place at which Robert attempted the adventurous project of selling the wreck of the family library, along with his own small parcel of school-books, was Leith Walk, where a shop of particularly humble kind, at a yearly rent of six pounds, with space for a stall in front, was procured for the purpose. The situation of this unpretending place of business was opposite Pilrig avenue. Here he may be said to have set up house, for, provided with a few articles of furniture, and exercising a rigorous frugality, he lived in his very limited establishment. To keep him company, and aid by my professional advice, as well as to lessen his expenses, I went to reside with him, quitting, with my blue-painted box, my quarters in the West Port, to which I had no reason to feel special attachment. The time was near at hand when I would myself have to appear in a new character.

BEGINNING BUSINESS—1819 TO 1821.

Late on Saturday evening in May, 1819, my apprenticeship came to a close, and I walked away with five shillings in my pocket—to which sum my weekly wages had been latterly and considerately advanced. My employer, to do him every justice, offered to retain me as assistant at a reasonable salary; but I liked as little to remain as to try my luck elsewhere as a subordinate. Whether influenced by my father's harangues about independence, or by my own natural instincts, I had formed the resolution to be my own master, and concluded that the sooner I was so the better. And so, at nineteen years of age, I was left to my shifts.

The exploit was somewhat hazardous, and unless on special grounds, I would not recommend it to be followed. Society is composed of employers and employed. All can not be masters. The employed may happen to be the best off of the two; at all events, they are burdened with less responsibility. My resolution, therefore, to fight

my way, inch by inch, entirely on my own account, was, I acknowledge, an eccentricity. Yet, who can lay down any precise rule on this point? Looking at all available circumstances, every one must think for himself, and take the consequences. In the ordinary view of affairs, my prospects were not particularly cheering. Exclusive of the five shillings in my pocket, I was without any pecuniary reliance whatsoever. There were, however, some things in my favor. As in my brother's case, I had youth, health, hope, resolution, and was as free from expensive habits and tastes as from any species of embarrassing obligation. There was nothing to keep me back, unless it might be the comparatively narrow scope for individual exertion in our northern capital. At that time, however, I knew nothing personally of London and its illimitable field of operation. The best had to be made of what was within reach. Fortunately, I continued still to have no acquaintances whom it was necessary to consult; had no giddy companions, who would have been ready enough to jeer me out of schemes of humble self-reliance. I had no dread of losing caste, because I had no artificial position to lose; and as for losing self-respect, that entirely depends on conduct and the motives by which it is influenced. It will be seen that I was not without the kind of ambition which is indispensable to success. On that very account, I treated all immediate difficulties, or humiliations, as of no moment.

Circumstances occurred to get me over the first step, which is always the most difficult. The success of my brother in his enterprise pointed out a line of business that might with advantage be followed. As Leith Walk happens to be identified in an amusing way with his as well as my own early career, I may say a few words respecting it, although at the risk of telling what may be generally known.

Leith Walk is to Edinburgh what the City Road is to London, a broad kind of Boulevard stretching a mile in length to the seaport, and constantly used as a thoroughfare by merchants, clerks, strangers, and seafaring people. In the early years of the present century, it was the daily resort of a multiplicity of odd-looking dependents on public charity—such as old blind fiddlers, seated by the wayside; sailors deficient in a leg or an arm, with long queues hanging down their backs, who were always singing ballads about sea-fights; and cripples of various sorts, who contrived to move along in wooden bowls, or in low-wheeled vehicles drawn by dogs; all which personages reckoned on reaping a harvest of coppers in the week of Leith races, that great annual festival of the gamins of Edinburgh, which has been commemorated in the humorous verses of Robert Fergusson. Besides its hosts of mendicants, the Walk was garnished with small shops for the sale of shells, corals, and other foreign curiosities. It was also provided with a number of petty public houses; but its greatest attraction was a show of wax-work, at the entrance of which sat the figure of an old

gentleman in a court-dress, intently reading a newspaper, which, without turning over the leaves, had occupied him for the last ten years.

The oddest thing about the Walk, however, was an air of pretension singularly inconsistent with the reality. The sign-boards offered a study of the definite article—*The* Comb Manufactory, *The* Chair Manufactory, *The* Marble Work, and so forth, appearing on the fronts of buildings of the most trumpery character. At the time I became acquainted with the Walk, it owned few edifices that were much worth. Here and there, with intervening patches of nursery grounds and gardens, there was a detached villa or a row of houses with flower-pots in front, in one of which rows, called Springfield, in the house of his friend Mr. M'Culloch of Ardwell, the English humorist, Samuel Foote, used to dine on his visits to Edinburgh.* But the majority of the buildings were of a slight fabric of brick and plaster, with tiled roofs, as if the whole were removable at a day's notice. There being no edifices, however mean and inconvenient, which do not find inhabitants, these frail tenements were in demand by a needy order of occupants, whose ultimate limit in the article of rent was ten to twelve pounds a year—fifteen a little beyond the thing, twenty not to be thought of.

It was one of these temporary and unattractive buildings, situated, as has been said, opposite Pilrig avenue, that had been rented by my brother, and it was there I joined him in housekeeping, with nothing to keep but the disconsolate walls and about ten shillings' worth of furniture, along with a bed of very insignificant value. In 1819, Robert had to quit, in consequence of the proprietor making repairs on the row of buildings, and he removed about a hundred yards further down the walk. The alterations on Gile's Buildings, as they were called, had just been made when I stood in need of a place of business, and I rented one pretty nearly on the spot which my brother had vacated. The changes that had been made partook of the usual character of the neighborhood—shabby pretension. The proprietor, a builder in Edinburgh, had accumulated a number of old shop doors and windows, which, dismissed as unfashionable, gave a genteel finish to the new fronts that were stuck up along the row of mean brick edifices. Here I procured a place of moderate dimensions, for which I was to pay an annual rent of ten pounds.

Without stock, capital, or shop furniture, my attempt at beginning business would almost seem like trying to make something out of

* The intimacy of Foote and a land-proprietor in the stewartry of Kirkcudbright will seem a little unaccountable. The friendship accidentally began by both being detained as travelers during a protracted snow-storm, first in an inn at Moffat, and afterwards at the Crook, in the winter of 1744-45. They were detained no less than twenty days altogether in effecting a journey from Moffat to Edinburgh, which may now be performed in about two hours. A daughter of M'Culloch was married to Thomas Scott, brother of Sir Walter.

nothing. I admit, the problem was difficult of solution. In one respect, it was fortunate in the way of example that Robert had begun first, but in another it was a disadvantage. In setting up he had cleared my father's house of all its old books, which, though not many in number, or of great value, still bore bulk so far, and giving a face to things, served for a not positively bad beginning. Coming later into the field, nothing was left for me to lay hands on in the like predatory fashion. I should doubtless, as a last resource, have procured a portion of Robert's stock of books, which, in the course of a year, had increased by his industry to be worth about twelve pounds, but by a remarkably happy turn of events, I did not need to encroach on his painfully accumulated property.

During the first week of my freedom, there arrived in Edinburgh a traveling agent for an enterprising publisher in London. He had come to exhibit to the Scottish booksellers specimens of cheap editions of standard and popular works. Until within a short time previously, editions of the works of Johnson, Gibbon, Robertson, Blair, Hume and Smollett, Burns, and other standard writers, had been a monopoly of certain publishers, who united to publish them, and gave them the imposing name of "Trade Editions." Long out of copyright, these works were public property, and could legally be printed and issued by any one, but not until now had any one had the audacity and enterprise to disregard the assumed etiquette of the profession, and print and sell editions on his own account. In daring to break down this monopoly, the publisher I refer to encountered some abuse, which, however, did not deter him in his operations. His editions, as a rule, were not so highly finished as those issued under the auspices of the trade; but as they were sold at about half the price, they were correspondingly appreciated by that portion of the book-buying world who are not scrupulously nice as to typographical elegance.

This active personage, well-known in Cheapside, had another and quite as successful a branch of business. It consisted in purchasing, wholesale, the remainders of editions which hung on the hands of publishers, and of issuing copies at a cheap price under new attractions, such as a portrait frontispiece and a flashy exterior, by which means two important ends were served: the shelves of the publishers were relieved of much dead stock, and the public was satisfied.

It was the agent of this enterprising tradesman who, by a singular accident, fell in my way. In concluding his business tour, he had arrived in Edinburgh to hold a trade-sale previous to proceeding to London. A trade-sale, as it may be known, comprehends a dinner at some noted tavern. A large number of booksellers are invited to attend, and immediately after the cloth is withdrawn, and the wine decanters put in circulation, the sale begins. All the guests are provided with catalogues of the books for disposal, and as each work is offered in turn at a specified price, copies are handed about as speci-

mens. The inducement to make purchases is a certain reduction on the ordinary allowance, and, in addition, thirteen copies are usually given for the price of twelve. At the period to which I am referring, trade-sales of this festive description were more common than they are in these sober-minded days, and at them such large quantities of books were ordinarily disposed of, that the seller, who acted as host, and sat at the top of the table, did not find occasion to grudge the expense of the entertainment. The business was conducted with a blending of fun and conviviality. There was occasionally a toast, with the honors, as an interlude, and it was not unusual for one or two of the guests to be called on for a song.

The sale on the present occasion took place in the Lord Nelson Hotel, Adam Square. The agent in charge requiring some one acquainted with the handling and arranging of books, previous to the dinner, heard of me from a bookseller as being unemployed and likely to suit his purpose. I agreed to assist him as far as was in my power, and did so without any notion of requital.

The trade-sale was well attended, and went of with uncommon *éclat*. Mr. Robert Miller, of Manners and Miller, told his drollest anecdotes, whistled tunes with the delicacy of a flageolet, and sung his best songs as few men can sing them. There was a large sale effected; for it was the first time that a variety of standard works had been offered at considerably reduced prices. On the day succeeding this bibliopolic festival, I attended to assist in packing up, in the course of which I was questioned regarding my plans. I stated to the friendly inquirer that I was about to begin business, but that I had no money; if I had, I should take the opportunity of buying a few of his specimens, for I thought I could sell them to advantage. "Well," he replied, "I like that frankness; you seem an honest lad, and have been useful to me; so do not let the want of money trouble you: select, if you please, ten pounds' worth of my samples, and I will let you have the usual credit."

That was a turn-point in my life. In a strange and unforseen manner, I was to be put in possession of a small collection of salable books, sufficient to establish me in business. Gladly embracing the offer, I selected a parcel of books great and small, to the value of ten pounds, which I proceeded to pack into an empty tea-chest, and carry off without incurring the aid or expense of a porter. Borrowing the hotel truck, I wheeled the chest to my shop in Leith Walk, elated, it may be supposed, in no ordinary degree at this fortunate incident, and not the least afraid of turning the penny long before the day of payment came round.

Though furnished in this extraordinary manner with a stock, I was still unprovided with any kind of fixtures, such as counter or shelving. But this deficiency gave me little concern. It was not my design to sell books inside a shop. That, I knew, would never do. My plan, like that of my brother and also many illustrious predeces-

sors, was to expose my wares on a stall outside the door. I had years previously read the "Autobiography of James Lackington," who mentions that he began business as a bookseller in 1774, the whole of his stock of old books, laid out on a stall, not amounting to five pounds in value; that in 1792, when he retired into private life, the profits of his business amounted to 5,000*l.* a year; and that he had realized all he was possessed of by "*small* profits, bound by *industry* and clasped by *economy*." I could not possibly expect to reach any thing like this marvelous success of Lackington, but at any rate there was an example offered in his small beginning, which it was my resolution to follow.

I spent little time in preliminary arrangements. With the five shillings which I had received as my last week's wages, I purchased a few deals from a neighboring woodyard, and from these, with a saw, hammer, and nails, I soon constructed all the shop furniture which I required; the most essential articles being a pair of stout trestles, on which was laid a board, whereupon to exhibit my wares to the public. With these simple appliances, I am to be supposed as beginning business one day in June, when, the weather happening to be fine, I had the satisfaction of making several sales. Daily, the contents of my small establishment disappeared, and I was able to introduce variety by buying lots of second-hand books at the nightly auctions, which I regularly attended with my brother. As regards the account I had incurred, I discharged it in the due course of business, and for some time continued to order and pay for regular supplies. Within six months, the first and most critical part of my struggle was over. In a small way, I may be considered as having been fairly established.

By studying to sell cheaply, my profits in the aggregate were not great; but along with Robert, I lived frugally, incurred no unnecessary expenses, and all that was over I laid out in adding to my stock. As my sales were to a large extent new books in boards, I felt that the charge made for the boarding of them was an item that pressed rather heavily upon me. Why, thought I, should I not buy the books in sheets, and put them in boards myself? It is true, I had not been taught the art of bookbinding, but I had seen it executed in my frequent visits to bookbinder's workshop, and was confident that if I had the proper apparatus I could at least put books in boards; for that was but a rudimentary department of the craft. The articles available for the purpose at length fell in my way. After this, I procured my books in sheets, which I forthwith folded, sewed, and otherwise prepared to my satisfaction, thereby saving on an average threepence to fourpence a volume, my only outlay being on the material employed; for my labor was reckoned as nothing.

In this droll scheming way, I tried to make the best of my lot. The condition of the weather was an important element of consideration. In fine days, the Walk was thronged with foot-passengers, a number of

whom found some recreation in lounging for a few minutes over my stall. If there was a prospect of rain, they hurried on; and when it became determinedly wet, business was over for the day. I might as well bring in my books at once, and try to find something to do indoors. When the stall was not in operation, sales were almost at a stand-still. Hundreds, I found, as Lackington had done before me, would buy books from a stall, who would not purchase them equally cheap in a shop. The advantageous peculiarity of the stall is, that it secures those who have formed no deliberate intention to buy. Lying invitingly with their backs upward, the books on a stall solicit just as much attention as you are pleased to give them. You may look at them, or let them alone. You may, as if by chance, take up and set down volume after volume without getting compromised. The bookseller, however, is perfectly aware of what is likely to ensue. When he observes that the lounger over his stall is not satisfied with a casual glance, but goes on examining book after book, he is pretty certain there is to be a purchase. Continued inspection excites an interest in the mind. There is perhaps no intention at first to buy, but gradually the feelings are warmed up, and it is then scarcely possible to resist asking the price of some book which more particularly strikes the fancy. Asking the price is equivalent to passing the Rubicon. After that, the desire for purchasing becomes nearly irresistible. Going into shops to buy books in cold blood is quite a different thing. Before entering, there must in general be a distinct intention to purchase.

Stall-keepers of all varieties know the value of the obtrusive principle; and it may be doubted if the modern shop system is in most cases an improvement on the old practice of exposing wares in open booths along the sides of the thoroughfare. The original *Stationarii*, who exposed their books at the gateways of universities, immediately after the invention of printing, what were they but stall-keepers? Did not also many booksellers of good repute last century set up stalls for the sale of their wares on market-days? One does not read without interest the anecdote of Michael Johnson, bookseller at Lichfield, who, being unable from illness to set up his stall as usual at Uttoxeter, requested his son Samuel to do so in his stead, which request was refused, from a feeling of false pride; and how this act of filial disobedience, having preyed in after life on the morbidly susceptible mind of the great lexicographer, he, by way of expiation, went to Uttoxeter on a market-day, and stood in a drenching rain on the site of his father's stall, amidst the jeering remarks of the bystanders. There is something, therefore, like a classic authority for book-stalls. They remind us of the infancy of printed literature and the usages of an olden time.

The Walk offered uncommon facilities for the traffic in which I was engaged. Long stretches of the foot way, from thirty to forty feet wide, admitted of stalls being set outside the doors without ob-

structing the thoroughfare. Some might think that they were an attraction to what was otherwise a pleasant promenade. The bookstalls were four in number—those belonging to my brother and myself, and two others. They were all situated on the shady side of the road, forming at proper distances from each other a series of literary lures, likely to be visited *en suite*. Interesting from the diversity of their wares, they to a certain extent were mutually helpful. There was nothing like a feeling of rivalry among us. Accustomed to discuss professional matters, we were able to cultivate a few jocularities as a seasoning to a too frequent dullness. We learned how to distinguish habitual nibblers, who never bought, but only gave trouble, from those on whom we could reasonably reckon for a purchase, and knew how to act accordingly. The stall offered a study of character. There was not a little perversity or stupidity to be amused with. Some stall frequenters would buy nothing but books which had been used. Defective in judgment, they could not imagine the possibility of getting a new book as cheaply as an old one. The stall-keepers on the Walk found it necessary to humor purchasers of this sort. It was not difficult to do so; they had only to cut up the leaves, and soil the outside of a book, in order to make it thoroughly acceptable.

With all the diligence that could be exercised, there was little scope for expansion in my small trade. With every effort, time hung heavy on my hands. I fretted at inaction. To relieve the monotony of the long, dull hours during bad weather, I took to copying poems and various prose trifles in a fine species of penmanship, in the hope of selling them for albums. It was assuredly a weak resource, but what could I do? If I spent days over the manufacture of a few verses, which sold for only a single shilling, it was employment, better than sitting vaguely idle.

The notion of attempting to write in a style closely resembling the delicate print-like lettering on copperplate engravings occurred to me two or three years previously. A retired naval officer in poor circumstances had written an account of his captivity in France during the war, and raffled it for five pounds. The penmanship was exceedingly elegant, and I felt desirous to attempt something that might prove equally tasteful. From time to time, I made attempts at imitation, but never came up to the original. I had, however, acquired a facility in the art. The work was executed with a finely pointed crow-pen on smooth paper, ruled with lines for the purpose, and cost prodigious care and patience, because any blunder would have been fatal. Occupying any spare hours when the stall could not be put out, and poring over a desk, I was able to realize a few shillings by these laborious transcriptions. What was of much greater value, these little pieces of penmanship helped to bring me more into notice, and to procure me the friendship of some estimable persons.

A gentleman who happened to see one of my specimens of calli-

graphy, was pleased to think better of it than it deserved, and without solicitation patronized my humble business establishment. He was about to be married, and wished to procure a quantity of books of a superior kind, in the finest bindings, for his library. One day, he called to inquire as to the practicability of my supplying his wants. Satisfied with the information, he gave an order of such magnitude as astonished me, and raised serious doubts as to how, with my miserable resources, it was to be executed. Apprehending some difficulty on this score, he relieved all anxieties by stating that I should bring the books in parcels from time to time, and that each parcel would be paid for on delivery.

This fortunate transaction gave me a lift onward, and stimulated to new efforts. The fact that I had been unexpectedly benefited in a large degree by a gentleman seeing one of my small pieces of penmanship, suggests the reflection, that in business, as in human affairs generally, incidents which are seemingly insignificant often lead to important results. Young men are apt to treat what appears a small matter with indifference, if not disdain, without being conscious that in commerce nothing is small or to be passed over as of no moment. I once heard a merchant who had risen to great wealth say, that civility in serving a woman in humble circumstances, with a pennyworth of tape, had led, by a remarkable chain of circumstances to dealings to the extent of hundreds of pounds. In my own case, as just stated, a small piece of transcription with a crow-pen had, by an unforeseen current of events, terminated in a manner much more advantageous than I had any reason to expect.

The progress I had made during the first year rendered it expedient to procure an enlargement of my premises. This being effected, I was able to appropriate a small back-room as a dwelling, so as to be near my work; the furniture as meager as might be, for I could not indulge in the luxury of a carpet, and was fain to inclose my bed with a drapery of brown paper in place of curtains. I was also enabled in various ways to extend my business operations, and accommodate those who did me the honor to call. Among these visitors were several literary aspirants who hung about the outskirts of society. Few are aware of the great number of poets in Scotland. Those whose names become generally known are insignificant in number to the host who are never heard of beyond the limited locality in which they move. My brother's and my own literary tastes, to say nothing of our connection with books, made us acquainted with several poets of this order. Among these, the oddest was an aged shoemaker, who, deserting his last, had taken to the writing of poems and dramas. His standard production was "The Battle of Luncarty," which his admirers thought "almost" as good as Shakespeare. William Knox, the author of "The Lonely Hearth and other Poems," was a gentle enthusiast of a different stamp, but suc-

cumbed at an early age to what were mildly termed his "genial propensities."

We were more happy in knowing intimately Robert Gilfillan, still a young man, writer of some pleasing and popular Scottish songs, who had been bred in Leith as an apprentice to a grocer, and had therefore undergone that routine of duties which I had narrowly escaped. He was a person of amiable temperament, simple in habits, with whom it was a pleasure to interchange courtesies. I may say the same of Henry Scott Riddell, who was numbered among our early friends, and has left some singularly touching lyrics and other pieces.

There was still another of these geniuses, John C. Denovan, an excitable being, who lived in a world of romance strangely at variance with his actual circumstances. I first knew Denovan when he was a porter to a tea-dealer at the foot of Leith Street Terrace, directly opposite the spot where I had been an apprentice. He was the child of misfortune. His father had procured for him the position of midshipman, in which capacity he made a single voyage and acquired notions of life at sea. Then he was somehow deserted, and left to his shifts with his mother, a poor abject being, to whom he stuck to the last. In his reduced condition, he acquitted himself honestly, but his wayward fancies did not square with the difficulties with which he had to struggle. He was always overflowing with allusions to Wordsworth, Byron, Keats, and Leigh Hunt. A little crazy on poetical subjects, he, by an easy transition, became half mad on politics, and edited a weekly periodical called *The Patriot* which was desperately radical in character. One of its leading articles, I remember, began with the portentious words: "Day follows day, and chain follows chain." Yet Denovan was a harmless creature. His poetical pieces were noticed with some approbation by Sir Walter Scott, who, while visiting Ballantyne's printing-office at Paul's Work, now and then, in a kindly way, looked in upon him at his den in Leith Wynd, where he latterly made a livelihood by coffee-roasting, and where he died in 1827. There was a little exhilaration in having an occasional conversation on literary topics with these writers. To a higher region we did not yet aspire.

I still at odd times continued my labors with the crow-pen, but at best this was a trivial art, and I had secret yearnings to procure a press and types, in order to unite printing with my other branches of business. I partly formed this desire by having employed a printer to execute a small volume, purporting to be an account of David Ritchie, the original of the Black Dwarf, whom I had seen when a boy in Peeblesshire. The success of this enterprise, commercially, led to the conclusion that if I could print as well as write my poor productions, I might add to my available means. It would be enough if I could procure an apparatus sufficient for executing small pamphlets and the humbler varieties of job-printing.

For some time my inquiries failed to discover what would be within the compass of my means, until at length a person who had begun business in a way not unlike my own, and constructed a press for his own use, intimated his desire of selling off, in order to remove to a distant part of the country. The whole apparatus, including some types, was to be disposed of cheaply by private bargain. The price sought could not be considered excessive. It was only three pounds. To set up as a printer on a less capital than this was surely impossible. I paid the money and became the happy possessor. From that time I troubled myself no more with imitative print-writing. That branch of art was taken up and followed for a time by my brother, who so greatly excelled in it as to leave my efforts far behind.

I hesitate to think that I acted properly in directing my mind towards letterpress printing, while deficient in capital to pursue the profession with any solid advantage. My best excuse was the wish to occupy idle time. In the mornings, when the sun was up, I endeavored to make use of the daylight by reading and study, as I had done formerly. Perusing the *Spectator*, I carefully scrutinized the papers of Addison and other writers, sentence by sentence, in order to familiarize myself with their method of construction and treatment. But beyond this I had little patience. I felt that the time had come for action, and that every hour spent in doing nothing was little better than wasted. Yet, with every excuse, I have never ceased to be amazed at my presumption in trying, without any knowledge of the typographic art, to set up with such miserable mechanical appliances. The press, which was constructed to stand on a table, was an imperfect little machine, with a printing surface of no more than eighteen inches by twelve, and when wrought, a jangling and creaking noise was produced that might be heard as far as two houses off.

As regards my font of types, it consisted of about thirty pounds' weight of brevier, dreadfully old and worn, having been employed for years in the printing of a newspaper, and, in point of fact, only worth its value as metal. Along with the font, I had a pair of cases, in which the letters were assorted. My bargain did not embrace a frame or stand for the cases. That I supplied by the ordinary resource of wood bought from a timber-yard, and the application of my carpenter's tools. For a small additional outlay, I procured a brass composing-stick, some quoins, and other pieces of furniture, an iron chase, and a roller, along with a pound-weight of printing ink. I was now complete.

As soon as I had arranged all parts of my apparatus, I looked abroad over the field of literature to see which work should first engage my attention. My best plan, as I thought, would be to begin by printing a small volume on speculation; to sell the copies, and with the proceeds buy a variety of types for executing casual jobs which might drop in. A small volume I must print, and finish in a marketable style, that is clear, in order to raise funds. Fixed in this

notion, I selected for my first venture a pocket edition of the songs of Robert Burns.

I had never been taught the art of the compositor, but just as I had casually gleaned some knowledge of book-binding, so I had picked up the method of setting types. When an apprentice, I had been frequently sent errands to the printing-office of Mr. Ruthven, in Merchants Court, the premises which, two centuries previously, had formed the town mansion of Thomas Hamilton, first Earl of Haddington, jocosely styled, by James VI, "Tam o' the Cowgate." In the fine old dining-hall where "Tam" had entertained royalty, I was, while waiting for proofs, favored with an opportunity of seeing the compositors pursue their ingenious art, and learning how types were arranged in lines and pages. Recollections of what I had thus seen of compositorship were now revived, and I began to set up my song-book without receiving any special instruction; my composing-frame being placed in such a situation that I was ready to attend to other matters of business. While so occupied, I was visited by my old friend, James King, whom I had for some time lost sight of. His taste for chemistry had brought him into the employment of a glass manufacturer; and now, in connection with that line of business, he was about to sail for Australia, where a useful career was before him. He was amused with, and, I think, compassionated my feeble efforts. We parted, not to meet until both were in different circumstances, many years afterwards.

My progress in compositorship was at first slow. I had to feel my way. A defective adjustment of the lines to a uniform degree of tightness was my greatest trouble, but this was got over. The art of working my press had next to be acquired, and in this there was no difficulty. After an interval of fifty years, I recollect the delight I experienced in working off my first impression; the pleasure since of seeing hundreds of thousands of sheets pouring from machines in which I claim an interest being nothing to it! If the young and thoughtless could only be made to know this,—the happiness, the dignity of honest labor conducted in a spirit of self-reliance; the insignificance and probably temporary character of untoward circumstances while there is youth, along with the willing heart; the proud satisfaction of acquiring by persevering industry instead of by compassionate donation,—how differently would they act!

I think there was a degree of infatuation in my attachment to that jangling, creaking, wheezing little press. Placed at the only window in my apartment, within a few feet of my bed, I could see its outlines in the silvery moonlight when I awoke; and there, at the glowing dawn, did its figure assume distinct proportions. When daylight came fully in, it was impossible to resist the desire to rise and have an hour or two of exercise at the little machine.

With an imperfect apparatus, the execution of my song-book was far from good. Still, it was legible in the old ballad and chap book

style, and I was obliged to be content. Little by little I got through the small volume. It was a tedious drudgery. With my limited font, I could set up no more than eight small pages, forming the eighth part of a sheet. After printing the first eight, I had to distribute the letter and set up the second eight, and so on throughout a hundred pages. Months were consumed in the operation. The number of copies printed was seven hundred and fifty, to effect which I had to pull the press twenty thousand times. But labor, as already hinted, cost nothing. I set the types in the intervals of business, particularly during wet weather, when the stall could not be put out, and the press-work was executed late at night or early in the morning. The only outlay worth speaking of for the little volume was that incurred for paper, which I was unable to purchase in greater quantities than a few quires at a time, and therefore at a considerable disadvantage in price, but this was only another exemplification of the old and too well-known truth, that "the destruction of the poor is their poverty," about which it was useless to repine.

When completed, the volume needed some species of embellishment, and fortune helped me at this conjuncture. There dwelt in the neighborhood a poor but ingenious man, advanced in life, named Peter Fyfe, with whom I had already had some dealings. Peter, a short man, in a second-hand suit of black clothes, and wearing a white neckcloth, which he arranged in loose folds so as effectually to cover the breast of his shirt, was from the west country. He had been a weaver's reed-maker in Paisley, but having been unfortunate in business, he had migrated to Edinburgh, in the hope of procuring some kind of employment. Necessitous and clever, with an inexhaustible fund of drollery, he was ready for any thing artistic that might come in his way. Peter did not want confidence. I am not aware of any department in the fine or useful arts of which he would have confessed himself ignorant. At this period, when few knew any thing of lithography, and he knew nothing at all, he courageously undertook, in answer to an advertisement, to organize and manage a concern of that kind, and by tact and intuition gave unqualified satisfaction. Peter was just the man I wanted. Although altogether unacquainted with copperplate engraving, he executed, from the descriptions I gave him, a portrait of the Black Dwarf, for my account of that singular personage; which sketch has ever since been accepted as an authority.

I now applied to this genius for a wood-engraving for my song-book, which he successfully produced, and for a few shillings additional he executed a vignette representing some national emblems. Invested with these attractions, the song-book was soon put in boards, and otherwise prepared for disposal. I sold the whole either in single copies at a shilling, or wholesale to other stall-keepers at a proper reduction, and, after paying all expenses, cleared about nine pounds by the transaction.

Nine pounds was not a large sum, but it served an important end. I was able to make some additions to my scanty stock of types, which I procured from an aged printer with a decaying business. To be prepared for executing posting-bills, I cut a variety of letters in wood with a chisel and pen-knife. For such bold headings, therefore, as "Notice," "Found," or "Dog Lost," I was put to no straits worth mentioning. One of my most successful speculations was the cutting in wood of the words "To Let," in letters four inches long, an edition of which I disposed of by the hundred at an enormous profit, to dealers who sold such things to stick on the fronts of houses to be let.

Through the agency of book-hawkers who purchased quantities of my "Burns's Songs," I procured some orders for printing "Rules" for Friendly and Burial Societies. These answered me very well. The Rules were executed in my old brevier, leaded, on the face of half a sheet of foolscap, and were therefore within the capacity of my font. A person who was a lessee of several toll-bars in the neighborhood of the city, found me out as a cheap printer, and gave me a job in printing toll-tickets, which I executed to his satisfaction. Another piece of work of a similar character which came in my way was the printing of tickets for pawnbrokers. My principal employer in this line was a lady whose establishment was a second floor in High street. She was a short, plump, laughing, good-natured woman, turned of fifty years of age. Her family consisted of a niece, who attended to business, and an aged female domestic, who went by the name of "Pawkie Macgouggy." Pawkie, who had been a servant in the family for upwards of twenty years, received me when I called with a package of tickets, and kindly gave me a seat in the kitchen till her mistress could be communicated with.

The lady was so obliging as to show me some politeness, and then, as well as a few years later, I learned a part of her history. She had traveled abroad, and brought with her to Edinburgh a knowledge of Continental cookery. With this useful acquirement, she set up a tavern business in South Bridge street, and there she laid the foundation of her fortune by a dexterous hit in the culinary art. This consisted in the invention of a savory dish possessing an odor which, it was said, no human being could resist. To this marvelously fascinating dish she gave the name of Golli-Gosperado. The way she attracted customers was ingenious. Her tavern was down a stair, and was lighted by windows to the street, protected by iron gratings, over which the passengers walked. Having prepared her Golli-Gosperado, she put a smoking dish of it underneath the gratings in the pavement. According to her own account, the odor was overpowering. Gentlemen in passing were instantly riveted to the spot. They declared they must have some of that astonishing dish, whatever it was, and at whatever cost, and down-stairs they rushed accordingly. For a time there was quite a furore in the town about the Golli-

Gosperado. The happy inventor retired from the trade with so much money that she was able to set up as a pawnbroker. In that profession she was likewise successful, and ultimately retired altogether from business to a villa in the neighborhood, where she died, being attended in her last moments by the faithful and sorrowing Pawkie Macgouggy.

My means being somewhat improved, it did not appear unreasonable that I should enlarge my stock of letter by ordering a moderate font of long primer adapted for pamphlet-work from an aged type-founder, named Matthewson, who carried on business at St. Leonard's, and with whom I had become acquainted. In his walks, he occasionally called to rest in passing, and hence our business dealings. His cut of letter was not particularly handsome, but in the decline of life, and in easy circumstances, he did not care for new fashions.

Disposed to be familiar, Matthewson gave me an outline of his history. He had, he said, been originally a shepherd boy, but from his earliest years had possessed a taste for carving letters and figures. One day, while attending his master's sheep, he was accidentally observed by the minister of the parish to be carving some words on a block of wood with a pocket-knife. The clergyman was so pleased with his ingenuity that he interested himself in his fate, and sent him to Edinburgh to pursue the profession of a printer. Shortly afterwards, he began to make himself useful by cutting dies for letters of a particular description required by his employer, there being then no type-founder in the city. While so occupied, he attracted the notice of Benjamin Franklin on his second visit to Scotland. This was about 1771. Franklin was pleased with the skill of the young printer, and offered to take him to Philadelphia, and there assist him in establishing a letter-foundry. Matthewson was grateful for the disinterested offer, of which, unfortunately, for family reasons, he could not take advantage. He set up the business of letter-founding in Edinburgh, which he had all to himself until the commencement of establishments with higher claims to taste in execution. To vary the monotony of my occupation, I had for some time been making efforts at literary composition. It was little I dared to attempt in that way, for anxiety concerning ways and means impelled me to disregard every species of employment that partook of recreation, or which was not immediately advantageous. With a view to publication at the first favorable opportunity, I wrote an account of the Scottish Gypsies, for which I drew on my recollection of that picturesque order of vagrants in the south of Scotland, and also the traditions I had heard regarding them. It was a trifle — nothing worth speaking of; but being now provided with a tolerably good font of long primer, also some new brevier suitable for foot-notes, I thought it might be made available. I accordingly set up the tract as a six-penny pamphlet; and for this small brochure a coarse copper-plate engraving was furnished by that versatile genius, Peter

Fyfe. It represented a savage gypsy-fight at a place called Lowrie's Den, on the top of Soutra Hill. The edition was sold rapidly off, and I cleared a few pounds by the adventure. What was of greater service, I felt encouraged to put my thoughts on paper, and to endeavor to study correctness and fluency of expression. The tract on the Gypsies also procured me the acquaintance of a few persons interested in that wayward class of the community.

My enlarged typographical capabilities led to new aspirations. Robert, who had made corresponding advances in business, but exclusively in connection with book-selling, was occupying his leisure hours in literary composition, which came upon him like an inspiration at nineteen years of age. His tastes and powers in this respect suggested the idea of a small periodical which we might mutually undertake. He was to be the editor and principal writer. I was to be the printer and publisher, and also to contribute articles as far as time permitted.

The periodical was duly announced in a limited way, and commenced. A name was adopted from the optical toy invented by Sir David Brewster, about which all classes were for a time nearly crazy. It was called the *Kaleidoscope, or Edinburgh Literary Amusement.* In size it was sixteen pages octavo—the price threepence—and it was to appear once a fortnight. The first number was issued on Saturday, October 6, 1821. The mechanical execution of this literary serial sorely tested the powers of my poor little press, which received sundry claspings of iron to strengthen it for the unexpected duty. My muscular powers likewise underwent a trial. I had to print the sheet in halves, one after the other, and then stitch the two together. I set all the types and worked off all the copies, my younger brother, James, a fair-haired lad, rolling on the ink and otherwise rendering assistance.

This was the hardest task I had yet undergone; for, being pressed by time, there was no opportunity for rest. Occupied with business, the composing-frame, and the press, also with some literary composition, I was in harness sixteen hours a day; took no more than a quarter of an hour to meals; and never gave over work till midnight. Sometimes I had dreadful headaches. Of course, I do not justify this excessive application. It was clearly wrong. I was acting in violation of the laws of health. Enthusiasm alone kept me up; certainly no material stimulus. My only excuse for this ardently pursued labor, which must have been troublesome to quietly disposed neighbors, was what at the same period might have been offered by my brother for his incessant self-sacrificing exertions—a desire to overcome a condition that provoked the most stinging recollections. I should probably have broken down but for the weekly repose and fresh air of Sunday, when, after attending church, I had an exhilarating ramble on the sands and links.

Robert wrote nearly the whole of the articles in the *Kaleidoscope,*

verse as well as prose. My contributions consisted of only three or four papers. The general tone of the articles, by whomsoever produced, may be acknowledged to have been unnecessarily caustic and satirical. There was also a certain crudeness of ideas, such as might be expected from young and wholly inexperienced writers. Nevertheless, there was that in the *Kaleidoscope* which was indicative of Robert's future skill as an essayist; for here might be found some of the fancies which were afterwards developed in his more successful class of articles. In particular, may be mentioned the paper styled the "Thermometer of Misfortune," in which occur the ideas that were in after years expanded into the essay on the luckless class of intemperates popularly known as "Victims."

This little periodical also contained a few articles descriptive of a wayward class of authors in the lower walks of life, written from personal knowledge, and marked by that sympathy for the unfortunate which characterized my brother through life. I feel tempted to give one of these sketches. It refers to Stewart Lewis, a hapless being with whom Robert had become acquainted when he himself was in straits previous to commencing his small business.

STEWART LEWIS.

"It was towards the end of 1816, when I lived in a cottage on one of the great roads which lead to this metropolis, that I was engaged in a mercantile concern in the city, and traveled thither every morning, and, after the duties of the day were performed, came back in the evening. I was one evening, after my return, entertained by my mother with an account of two extraordinary persons who had called during my absence, and who afterwards proved to be Stewart Lewis and his wife, traveling on an expedition to Haddington, selling a small volume of poems which he had just published.

"The appearance and singular manners of these visitants were described to me in such terms of respect as made me regret my absence when they called; and the volume of poems which they had left increased my desire to see their author; for the acquaintance of a poet, and one who had actually printed his productions, was at that time an object of very great interest, and even curiosity.

"On the very next evening, however, my curiosity was destined to be gratified, for who should drop in upon us but poor Lewis with his wife! They had, to use the wife's expression, 'never been off their feet' since early in the morning, and were very much fatigued accordingly. I was then introduced to the poet, and in the course of five minutes we were engaged in as sincere a friendship as if we had lived together from infancy. Whether it was from the naturally ardent enthusiasm of his temper, or a secret instinctive discovery that I was afterwards to become one of his own brotherhood, I will not, can not determine. From what I can recollect of his appear-

ance and countenance, he was dressed in a suit of shabby clothes, mostly of a gray color; his person was slender; his face interesting, and bearing peculiar marks of genius and intelligence; his forehead was high, his hair gray and thin, and he had a countenance wrinkled with care and squalid with poverty. He never spoke but under the influence of a sort of furor; and he even did not return thanks for the favor of another cup of tea without an excitation of feeling and expression which had in it something of poetic fervor.

"His wife was a little old woman, with no remains of that beauty which had captivated the high-toned heart of Stewart Lewis thirty years before. He had thus addressed her on the thirtieth anniversary of their marriage:

"'Though roses now have left thy cheek,
And dimples now in vain I seek;
Thy placid brow, so mild and meek,
Proclaims I still should love thee.

"'How changed the scene since that blest day!
My hair's now thin and silver gray;
Though all that 's mortal soon decay,
My soul shall live to love thee.'

She spoke in a low, querulous voice, subdued in its tones by a long course of misery. They addressed each other by terms of endearment as strong, and spoke with as great an affection, as they had done on their marriage day. An instance of conjugal attachment has seldom been found like that of Stewart Lewis and his sorrow-broken spouse. He had addressed several poems to her even in her old age, some of which are eminently beautiful, and breathe the spirit of as fond an affection as if they had still been the accents of a first love, unbroken and unproved.

"They were much fatigued when they arrived; but a refreshment of tea soon revived their spirits; and though the success of their journey had been very limited, the poor bard was soon elevated to a state of rapturous excitement; while yet in the intervals of his joy, the wife, who had less of a poetic temperament, and whom misfortune had taught the very habit of sorrow, would interfere, with a voice mournfully soothing, and warn him of his inevitable griefs to-morrow.

"After this we had frequent visits of Stewart Lewis; but as these were generally through the day, when I was engaged in the duties of my profession, I had little opportunity of seeing him. He had left several copies of his poems with us, and I afterwards succeeded in disposing of a few to the most poetical of the neighborhood, which raised a small sum. I then resolved to pay him a visit. My father accompanied me in this adventure, out of curiosity to see his dwelling. After searching all the closes at the west end of the Cowgate for his habitation, we were at length directed to it by an old woman,

who appeared like a corpse from the grave, rising out of a low cellar in a very dark close—such a pallid and wrinkled crone as I have seen full oft in my antiquarian researches through the ancient lanes of the town, emerging from her dark dungeon at midday to taste one breath of a somewhat purer atmosphere than that of her own subterranean domicil. With her shriveled arm she pointed up a narrow, crazy stair which winded above her head, and told us that the object of our search lived there. We thanked her, and ascended. At the second landing-place we entered a dark, narrow passage from which a number of doors seemed to diverge, the habitations of miserables, and in one of which dwelt Stewart Lewis.

"On entering this wretched abode, we found the unfortunate bard, with his son, a lad of seventeen, sitting at a table, and employed in stitching up various copies of his poems in blue paper covers. At our entrance he started up with an exclamation of surprise, and welcomed us to his humble shed. I perceived, however, that his countenance presently lost that bold smile of welcome, and his tongue that vehement gush of poetical, enthusiastic language habitual to him in even the lowest occurrences of common life; while his mind seemed engaged in recollecting whether there was any thing in the house with which he might entertain us. I soon eased him of his fear on that account by laying in his hand the small sum which I had collected for his benefit from the sale of his poems. His face immediately assumed its former smile, and, after thanking me, he sent away his son with two-thirds of the money to purchase whisky—an act of improvident extravagance which I could not help condemning with perhaps too great vehemence for a guest. He did not seem offended by my remonstrances. It was obvious, however, that the cause of his miserable and hopeless condition had been disclosed.

"After this interview I never saw Stewart Lewis more. His wife died shortly after, and he came to my father's house in my absence, in a state of distraction for his loss. He waited many hours for my return, but at last went away without seeing me. The depth of his sorrow was intimated to me in a way perhaps more affecting than any personal interview might have been. He left a letter, in which was written, in a hand which I could scarcely decipher, and in characters which strayed over the whole page,—

"'MY DEAR SIR:

I AM MAD.

STEWART LEWIS.'

"The affection which this poor man entertained for the benign being who, for upwards of thirty years, had shared with him a constant train of sorrow and poverty without ever repining, had in it something truly romantic. She was the first and only woman he had ever loved, and he always declared that he could not survive her

loss. Their love was mutual, and her devotion to him had been often shown by more substantial proofs than words.

"She had frequently, even when they were in a state of starvation, worked a whole day at some coarse millinery work to earn a sixpence, that she might, with mistaken kindness, supply her husband with spirits. The unfortunate habit of drinking intoxicating liquors, which he had acquired after an early disappointment in life, never afterwards left him; and whether to drown reflections on his own misery and blasted prospects, or to inspire him with the faculty of versification, he found the indulgence of that propensity, as he imagined, necessary to his existence. But never was the brow of this woman clouded with a reproof of the cause of all her sorrows, and a word of remonstrance against his foibles was never heard to escape her lips. He has commemorated his unutterable affections in several beautiful songs. In one, which he calls his 'Address to his Wife,' I find the following pathetic verses:

"'In youthful life's ecstatic days,
I've rapt'rous kissed the lips o' thine;
And fondly yet, with joy I gaze
On thee, auld canty wife o' mine.

"'When fortune's adverse winds did blaw,
And maist my senses I wad tine,
Thy smilin' face drove ill awa',
Thou ever dear auld wife o' mine.

"'Lang round the ingle's heartsome blaze,
Thy thrifty hand made a' to shine;
Thou'st been my comfort a' my days,
Thou carefu' auld wife o' mine.

"'When life must leave our hoary head,
Our genial souls will still be kin',
We'll smile and mingle wi' the dead,
Thou canty auld wife o' mine'

After the death of his wife he wandered all over Scotland and the northern counties of England, reckless of his fate. He lamented her death in ceaseless complaints, and seemed careless of life. The remainder of the copies of his poems which he had left with us—a considerable number—were sent to him while he was at Inverness, and he subsisted entirely on what the sale of them provided for upwards of a twelvemonth. When weary of existence, and worn out with fatigue, he died at an obscure village in Dumfriesshire about the end of 1818. He left three daughters, none of whom I ever saw, and one son, who had latterly been the companion of his wanderings—a youth unfortunately weak in his intellects, and of whose fate I have been able to learn nothing."

My brother's poetical pieces were the best. Some of them were

touching and beautiful, particularly the address "To the Evening Star," which has been often reprinted by compilers of volumes of poetry without intimating its origin, which is not surprising, for who knows that the obscure periodical in which it first made its appearance ever existed? It may be given as a specimen of his powers of versification at nineteen years of age.

TO THE EVENING STAR.

Soft star of eve, whose trembling light
  Gleams through the closing eye of day,
Where clouds of dying purple bright
  Melt in the shades of eve away,
And mock thee with a fitful ray,
  Pure spirit of the twilight hour,
Till forth thou blazest to display
  The splendor of thy native power.

'Twas thus when earth from chaos sprung,
  The smoke of forming worlds arose,
And, o'er thine infant beauty hung,
  Hid thee awhile in dark repose;
Till the black veil dissolved away,
  Drunk by the universal air,
And thou, sweet star, with lovely ray,
  Shone out on paradise so fair.

When the first eve the world had known
  Fell blissfully on Eden's bowers,
And earth's first love lay couched upon
  The dew of Eden's fairest flowers;
Then thy first smile in heaven was seen
  To hail the birth of love divine,
And ever since that smile hath been
  The sainted passion's hallowed shrine:
Can lover yet behold the beam
  Unmoved, unpassioned, unrefined?
While there thou shin'st the brightest gem,
  To Night's cerulean crown assigned.

Since then how many gentle eyes
  That love and thy pure ray made bright,
Have gazed on thee with blissful sighs,—
  Now veiled in everlasting night!
O, let not love or youth be vain
  Of present bliss, and hope more high;
The stars—the very clods remain—
  Love, they, and all of theirs must die.

Now throned upon the western wave,
  Thou tremblest coyly, star of love!
And dip'st beneath its gleamy heave
  Thy silver foot, the bath to prove.

And though no power thy course may stay,
Which nature's changeless laws compel,
To thee a thousand hearts shall say,—
Sweet star of love, farewell, farewell!

The *Kaleidoscope* did not last. It sold pretty well, but only to the extent of paying expenses, yielding no reward whatever for literary effort. Yet it was not an absolutely valueless undertaking. It was a trial of one's wings, and encouraged to higher flights in more favorable times and circumstances. The concluding number appeared on the 12th of January, 1822.

From about this time, new and enlarged views began to predominate. Early difficulties had been successfully mastered. Three to four years of a funny, scheming, struggling, tolerably hard-working existence, to be remembered like a dream or chapter of a romance, had effected every reasonable anticipation. Robert's originally small stock had increased to be worth about two hundred pounds, and I had made a similar advance. The Walk, as we thought, had fairly served its day. With sentiments somewhat akin to those of Tom Tug, in the "Waterman," when bidding a pathetic farewell to his "trim-built wherry," we were disposed to bid an affecting and grateful adieu to stall and trestles, and bequeath to others the advantages, the drolleries, and classic associations of open-air traffic. Migration was accordingly resolved on, and we had sundry communings as regards where we should respectively attempt to establish ourselves in Edinburgh.

It was now that Robert, as will be afterwards stated in his own words, became known to Sir Walter Scott, by writing for him, and presenting, through Mr. Constable, a transcript of the songs of the "Lady of the Lake," in the small and neat style of calligraphy to which I have made some reference. Immediately afterwards, in 1822, he removed to India Place; I removed to Broughton street in the spring of 1823; both places, as we diffidently ventured to hope, being intermediate to something better.

ROBERT'S WRITINGS—1822 TO 1832.

My brother's literary efforts had hitherto been on a limited scale. He had composed some pieces, remarkable, perhaps, for his years and the untoward circumstances in which he was placed; but, except by a few acquaintances, none augured that he would make any progress as an author. His first production, not a very high flight, was entitled "Illustrations of the Author of Waverley." It consisted of short sketches of several individuals, chiefly connected with the south of Scotland, popularly believed to have been the originals of characters in the earlier fictions of Sir Walter Scott, as, for example, Davie Gellatley, Dominie Sampson, Meg Merrilies, and Dandie Dinmont. The south-country people who came about us—one of them a retired

parish minister given to gossip—formed a convenient source of information on the subject.

In a book which speculated on the identification of actual scenes, incidents, and characters with what had given rise to the fictions of the novelist, it would have been strange if the writer had not sometimes gone a little wide of the mark. According to the Introduction to the annotated edition of the "Monastery," an erroneous conjecture had been hazarded respecting Captain Clutterbuck, who, not a little to the surprise of Sir Walter, was identified with a friend and neighbor of his own. Apart, however, from misapprehensions of this kind, the "Illustrations" pointed, in a wonderfully correct manner, at the originals of some of the principal characters in the earlier novels. The work, issued in 1822, formed a small volume, of which I was the printer. It was well received, and was subsequently (1824) republished in better style by an Edinburgh bookseller.

After being settled in India Place, Robert carried out the design of writing the "Traditions of Edinburgh," a work for which he was in a degree prepared by those youthful explorations already adverted to, as well as by his having meditated over the subject. Professedly, the book was to consist of amusing particulars concerning old houses, distinguished characters, and curious incidents, such as could be picked up from individuals then still living. The scheme met with general approval. There were still alive persons who had some remembrance of the Scottish capital in the early part of the reign of George III, when persons of rank were as yet dwellers in the tall tenements and dingy closes of the Old Town. One gentleman in the decline of life remembered as many as fifty titled personages, some of them of historical note, who dwelt in the Canongate (formerly the Court end of the town) as lately as 1769. There were others whose recollections did not extend so far back, but who in youth had been acquainted with interesting public characters who had disappeared. By procuring information from these various individuals regarding a past state of things, traditions were gathered together which in a few years later would have entirely vanished.

The "Traditions," thus happily put in shape while there were still living memories to draw upon, well suited the antiquarian tastes of my brother, and he entered on the work with the keenest possible relish. It was issued in parts, and I was, of course, the printer and publisher, the whole case and press work being as hitherto executed with my own hands. The result was a book in two volumes, with the date of 1824. In an introductory notice to a new edition in 1868, the author gives the following account of the manner in which the work was produced and received:

"I am about to do what very few could do without emotion: revise a book which I wrote forty-five years ago. This little work came out in the Augustan days of Edinburgh, when Jeffrey and Scott,

Wilson and the Ettrick Shepherd, Dugald Stewart and Allison, were daily giving the productions of their minds to the public, and while yet Archibald Constable acted as the unquestioned emperor of the publishing world. I was then an insignificant person of the age of twenty; yet, destitute as I was both of means and friends, I formed the hope of writing something which would attract attention. The subject I proposed was one lying readily at hand—the romantic things connected with Old Edinburgh. If, I calculated, a first *part* or *number* could be issued, materials for others might be expected to come in, for scores of old inhabitants, even up perhaps to the very 'oldest,' would then contribute their reminiscences.

"The plan met with success. Materials almost unbounded came to me, chiefly from aged professional and mercantile gentlemen, who usually, at my first introduction to them, stared at my youthful appearance, having formed the notion that none but an old person would have thought of writing such a book. A friend gave me a letter to Mr. Charles Kirkpatrick Sharpe, who, I was told, knew the scandal of the time of Charles II as well as he did the merest gossip of the day, and had much to say regarding the good society of a hundred years ago.

"Looking back from the year 1868, I feel that C. K. S. has himself become, as it were, a tradition of Edinburgh. His thin, effeminate figure, his voice pitched *in alt.*, his attire, as he took his daily walks on Princes street—a long blue frock-coat, black trousers, rather wide below, and sweeping over white stockings and neat shoes; something like a web of white cambric round his neck, and a brown wig coming down to his eyebrows—had long established him as what is called a character. He had recently edited a book containing many stories of *diablerie*, and another in which the original narrative of ultra-presbyterian church history had to bear a series of cavalier notes of the most mocking character. He had a quaint, biting wit, which people bore as they would a scratch from a provoked cat. Essentially, he was good-natured, and fond of merriment. He had considerable gifts of drawing, and one caricature portrait by him of Queen Elizabeth dancing, 'high and disposedly,' before the Scotch embassadors, is the delight of every body who has seen it. He was intensely aristocratic, and cared nothing for the interests of the great multitude. He complained that one never heard of any gentlefolks committing crimes nowadays, as if that were a disadvantage to them or the public. Any case of a Lady Jane stabbing a perjured lover would have delighted him. While the child of whim, Mr. Sharpe, was generally believed to possess respectable talents, by which, with a need for exerting them, he might have achieved distinction. His ballad of the 'Murder of Caerlaverock,' in the 'minstrelsy,' is a masterly production; and the concluding verses haunt one like a beautiful strain of music:

"'To sweet Lincluden's haly cells
Fu' dowie I'll repair;
There Peace wi' gentle patience dwells,
Nae deadly feuds are there.

"'In tears I'll wither ilka charm,
Like draps o' balefu' yew;
And wail the beauty that could harm
A knight sae brave and true.'

"After what I had heard and read of Charles Sharpe, I called upon him at his mother's house, No. 93 Princes street, in a somewhat excited frame of mind. His servant conducted me to the first floor, and showed me into what is generally called among us the back drawing-room, which I found carpeted with green cloth, and full of old family portraits, some on the walls, but many more on the floor. A small room leading off this one behind, was the place where Mr. Sharpe gave audience. Its diminutive space was stuffed full of old curiosities, cases with family bijouterie, etc. One petty object was strongly indicative of the man—a calling-card of Lady Charlotte Campbell, the once adored beauty, stuck into the frame of a picture. He must have kept it at that time about thirty years. On appearing, Mr. Sharpe received me very cordially, telling me he had seen and been pleased with my first two numbers. Indeed, he and Sir Walter Scott had talked together of writing a book of the same kind in company, and calling it 'Reekiana,' which plan, however, being anticipated by me, the only thing that remained for him was to cast any little matters of the kind he possessed into my care. I expressed myself duly grateful, and took my leave. The consequence was, the appearance of notices regarding the eccentric Lady Anne Dick, the beautiful Susanna, Countess of Eglintoune, the Lord Justice-clerk Alva, and the Dutchess of Queensberry (the 'Kitty' of Prior), before the close of my first volume. Mr. Sharpe's contributions were all of them given in brief notes, and had to be written out on an enlarged scale, with what I thought a regard to literary effect as far as the telling was concerned.

"By an introduction from Dr. Chalmers, I visited a living lady who might be considered as belonging to the generation at the beginning of the reign of George III. Her husband, Alexander Murray, had, I believe, been Lord North's solicitor-general for Scotland. She herself, born before the Porteous Riot, and well remembering the Forty-five, was now within a very brief space of the age of a hundred. Although she had not married in her earlier years, her children, Mr. Murray of Henderland and others, were all elderly people. I found the venerable lady seated at a window in her drawing-room in George street, with her daughter, Miss Murray, taking the care of her which her extreme age required, and with some help from this lady, we had a conversation of about an hour. She spoke with due reverence of her mother's brother, the Lord Chief-justice Mansfield; and when I

adverted to the long pamphlet written against him by Mr. Andrew Stuart at the conclusion of the Douglas Cause, she said that to her knowledge he had never read it, such being his practice in respect of all attacks made upon him, lest they should disturb his equanimity in judgment. As the old lady was on intimate terms with Boswell, and had seen Johnson on his visits to Edinburgh — as she was the sister-in-law of Allan Ramsay the painter, and had lived in the most cultivated society of Scotland all her long life — there were ample materials for conversation with her; but her small strength made this shorter and slower than I could have wished. When we came upon the *poet* Ramsay, she seemed to have caught new vigor from the subject; she spoke with animation of the child-parties she had attended in his house on the Castlehill during a course of ten years before his death, an event which happened in 1757. He was 'charming,' she said; he entered so heartily into the plays of children. He, in particular, gained their hearts by making houses for their dolls. How pleasant it was to learn that our great pastoral poet was a man who, in his private capacity, loved to sweeten the daily life of his fellow-creatures, and particularly of the young! At a warning from Miss Murray, I had to tear myself away from this delightful and never-to-be-fotgotten interview.

"I had, one or two years before, when not out of my teens, attracted some attention from Sir Walter Scott, by writing for him and presenting (through Mr. Constable) a transcript of the songs of the 'Lady of the Lake,' in a style of peculiar calligraphy, which I practiced for want of any better way of attracting the notice of people superior to myself. When George IV, some months afterwards, came to Edinburgh, good Sir Walter remembered me, and procured for me the business of writing the address of the Royal Society of Edinburgh to his Majesty, for which I was handsomely paid. Several other learned bodies followed the example, for Sir Walter Scott was the arbiter of every thing during that frantic time, and thus I was substantially benefited by his means.

"According to what Mr. Constable told me, the great man liked me, in part because he understood I was from Tweedside. On seeing the earlier numbers of the 'Traditions,' he expressed astonishment as to 'where the boy got all the information.' But I did not see or hear from him till the first volume had been completed. He then called upon me one day, along with Mr. Lockhart. I was overwhelmed with the honor, for Sir Walter Scott was almost an object of worship to me. I literally could not utter a word. While I stood silent, I heard him tell his companion that Charles Sharpe was a writer in the 'Traditions,' and taking up the volume, he read aloud what he called one of his *quaint bits*. 'The ninth Earl of Eglintoune was one of those patriarchal peers who live to an advanced age; indefatigable in the frequency of their marriages and the number of their children; who linger on and on, with an unfailing succession

of young countesses, and die at last leaving a progeny interspersed throughout the whole of Douglas's "Peerage," two volumes, folio, re-edited by Wood.' And then both gentlemen went on laughing for perhaps two minutes, with interjections: 'How like Charlie!' 'What a strange being he is!' '*Two volumes, folio, re-edited by Wood*, ha, ha, ha! There you have him past all doubt;' and so on. I was too much abashed to tell Sir Walter that it was only an impudent little bit of writing of my own, part of the solution into which I had diffused the actual notes of Sharpe. But, having occasion to write next day to Mr. Lockhart, I mentioned Sir Walter's mistake; and he was soon after good enough to inform me that he had set his friend right as to the authorship, and they had had a *second* hearty laugh on the subject.

"A very few days after this visit, Sir Walter sent me, along with a kind letter, a packet of manuscript, consisting of sixteen folio pages, in his usual close handwriting, and containing all the reminiscences he could at the time summon up of old persons and things in Edinburgh. Such a treasure to me! And such a gift from the greatest literary man of the age to the humblest! Is there a literary man of the present age who would scribble as much for any humble aspirant? Nor was this the only act of liberality of Scott to me. When I was preparing a subsequent work, 'The Popular Rhymes of Scotland,' he sent me whole sheets of his recollections, with appropriate explanations. For years thereafter, he allowed me to join him in his walks home from the Parliament House, in the course of which he freely poured into my greedy ears any thing he knew regarding the subjects of my studies. His kindness and good-humor on these occasions were untiring. I have since found, from his journal, that I had met him on certain days when his heart was overladen with woe. Yet his welcome to me was the same. After 1826, however, I saw him much less frequently than before, for I knew he grudged every moment not spent in thinking and working on the fatal tasks he had assigned to himself for the redemption of his debts.

"All through the preparation of this book, I was indebted a good deal to a gentleman who was neither a literary man nor an artist himself, but hovered round the outskirts of both professions, and might be considered as a useful adjunct to both. Every votary of pen or pencil among us knew David Bridges at his drapery establishment in the Lawnmarket, and many had been indebted to his obliging disposition. A quick, dark-eyed little man, with lips full of sensibility and a tongue unloving of rest, such a man in a degree as one can suppose Garrick to have been, he held a sort of court every day, where wits and painters jostled with people wanting coats, jerkins, and spotted handkerchiefs. The place was small, and had no saloon behind; so, whenever David had got some 'bit' to show you, he dragged you down a dark stair to a packing place, lighted only by a grate from the street, and there, amidst plaster-casts numberless,

would fix you with his glittering eye, till he had convinced you of the fine handling, the 'buttery touches' (a great phrase with him), the admirable 'scummling' (another), and so forth. It was in the days prior to the Royal Scottish Academy and its exhibitions; and it was left in a great measure to David Bridges to bring forward aspirants in art. Did such a person long for notice, he had only to give David one of his best 'bits,' and in a short time he would find himself chattered into fame in that profound, the grate of which I never can pass without recalling something of the buttery touches of those old days. The Blackwood wits, who laughed at every thing, fixed upon our friend the title of 'Director-general of the Fine Arts,' which was, however, too much of a truth to be a jest. To this extraordinary being I had been introduced somehow, and, entering heartily into my views, he brought me information, brought me friends, read and criticised my proofs, and would, I dare say, have written the book itself if I had so desired. It is impossible to think of him without a smile, but at the same time a certain melancholy, for his life was one which, I fear, proved a poor one for himself.

"Before the 'Traditions' were finished, I had become favorably acquainted with many gentlemen of letters and others who were pleased to think that Old Edinburgh had been chronicled. Wilson gave me a laudatory sentence in the 'Noctes Ambrosianæ.' The Bard of Ettrick, viewing my boyish years, always spoke of and to me as an unaccountable sort of person, but never could be induced to believe otherwise than that I had written all my traditions from my own head. I had also the pleasure of enjoying some intercourse with the venerable Henry Mackenzie, who had been born in 1745, but always seemed to feel as if the 'Man of Feeling' had been written only one instead of sixty years ago, and as if there was nothing particular in antique occurrences. The whole affair was pretty much of a triumph at the time. Now, when I am giving it a final revision, I reflect with touched feelings, that all the brilliant men of the time when it was written are, without an exception, passed away, while, for myself, I am forced to claim the benefit of Horace's humanity:

> "'Solve senescentum mature sanus equum, ne
> Peccet ad extremum ridendus, et ilia ducat.'" *

In this recent edition of the "Traditions" are comprehended a variety of particulars gathered since the first appearance of the work, and calculated to heighten the legendary picture of Old Edinburgh. A great portion of this new matter was drawn from a small work which my brother wrote under the title of "Reekiana," which appeared in 1833. The new edition of the "Traditions" is therefore a considerable improvement on the old. One does not read without

* Discreetly unharness in good time a horse growing old, lest in the end he make a miserable break-down.

interest an account of interviews with aged persons, such as Sir William Macleod Banatyne, who recollected the circumstance of "his father drawing on his boots to go to make interest in London in behalf of some of the men in trouble for the Forty-five, particularly his own brother-in-law, the clanranald of that day." Perhaps the most interesting of these interviews was one narrated as follows, with Mrs. Irving, a venerable lady who possessed by inheritance the patent of Anderson's pills, a drug which took its origin from Dr. Anderson, a physician of the time of Charles I:

"In 1829, Mrs. Irving lived in a neat, self-contained mansion in Chessels's Court, in the Canongate, along with her son, General Irving, and some members of his family. The old lady, then ninety-one, was good enough to invite me to dinner, where I likewise found two younger sisters of hers, respectively eighty-nine and ninety. She sat firm and collected at the head of the table, and carved a leg of mutton with perfect propriety. She then told me, at her son's request, that, in the year 1745, when Prince Charles's army was in possession of the town, she, a child of four years, walked with her nurse to Holyrood Palace, and seeing a Highland gentleman standing in the doorway, she went up to him to examine his peculiar attire. She even took the liberty of lifting up his kilt a little way; whereupon her nurse, fearing some danger, started forward for her protection. But the gentleman only patted her head, and said something kind to her. I felt it as very curious to sit as a guest with a person who had mingled in the Forty-five. But my excitement was brought to a higher pitch, when, on ascending to the drawing-room, I found the general's daughter, a pretty young woman, recently married, sitting there, dressed in a suit of clothes belonging to one of her nonagenarian aunts—a very fine one of flowered satin, with elegant cap and lappets, and silk shoes three inches deep in the heel—the same having been worn just seventy years before at a Hunter's Ball at Holyrood Palace. The contrast between the former and the present wearer—the old lady shrunk and taciturn, and her young representative full of life, and resplendent in joyous beauty—had an effect upon me which it would be impossible to describe. To this day, I look upon the Chessels's Court dinner as one of the most extraordinary events of my life. Mrs. Irving died in 1837, at the age of ninety-nine."

Passing to the next of my brother's productions: In November, 1824, there was a week of calamitous fires in Edinburgh, which desolated a portion of the High Street and Parliament Square. To help the fund raised on behalf of the sufferers on the occasion, he wrote a popular account of the chief "Fires which have occurred in Edinburgh since the Beginning of the Eighteenth Century." In the excitement of the moment it had a considerable sale, and was so far useful.

The success of the "Traditions" encouraged the preparation of a companion to that work, applying to the general features of the city, and partly devoted to the service of strangers. It was styled "Walks in Edinburgh," and was issued in 1825. From the pleasing, anecdotic style in which the book was written, it was well received, and added to the literary repute of the writer.

Diligent, painstaking, and with a love of what was old and characteristic, Robert had for some time been collecting a variety of familiar sayings in rhyme, and these appeared early in 1826, under the title of "Popular Rhymes of Scotland." As has been already mentioned, Sir Walter Scott, with his accustomed kindness, forwarded some contributions to the work, which has passed through three editions. As regards the purport of this collection of national rhymes, the following explanation is given in the preface to the third and considerably extended edition:

"Reared amidst friends to whom popular poetry furnished a daily enjoyment, and led by a tendency of my own mind to delight in whatever is qaint, whimsical, and old, I formed the wish, at an early period of life, to complete as I considered it, the collection of the traditionary verse of Scotland, by gathering together and publishing all that remained of a multitude of rhymes and short snatches of verse applicable to places, families, natural objects, amusements, etc., wherewith not less than by song and ballad, the cottage fireside was amused in days gone past, while yet printed books were only familiar to comparatively few. This task was executed as well as circumstances would permit, and a portion of the 'Popular Rhymes of Scotland' was published in 1826. Other objects have since occupied me, generally of a graver kind; yet amidst them all, I have never lost my wish to complete the publication of these relics of the old *natural literature* of my native country."

Among the persons to whom my brother applied for materials for the work was William Wilson, a young man of about his own age, who had similar poetical and archæological tastes, and for a time edited a literary periodical in Dundee. Between the two there sprung up an extraordinary friendship, which was not weakened by Wilson some years later emigrating to America, and setting up as a bookseller at Poughkeepsie, a pretty town on the Hudson, in the State of New York. The letters which passed between them bring into view a number of particulars concerning my brother's literary aims and efforts. Writing in January, 1824, to Wilson, whom he always addressed as his "dear Willie," he refers gratifyingly to the "Traditions," and the manner in which the book had brought him into notice: "This little work is taking astonishingly, and I am getting a great deal of credit by it. It has also been the means of introducing me to many of the most respectable leading men of the town, and has attracted to me the attention of not a few of the most eminent

literary characters. What would you think, for instance, of the venerable author of the "Man of Feeling" calling on me in his carriage to contribute his remarks in manuscript on my work! The value of the above two great advantages is incalculable to a young tradesman and author like me. It saves me twenty years of mere laborious plodding by the common walk, and gives me at twenty-two all the respectability which I could have expected at forty."

Later in the same year, he incloses a lyrical effusion to Wilson, the inspiring heroine of which can be guessed at from the name of a young lady, who was prevented by her mother from forming an intimacy with one not supposed to be in the category of an "eligible." It is to be regretted that "Leila" was not afterwards particularly fortunate in her marriage.

"Fair Leila's eyes, fair Leila's eyes,
Oft fill my breast with glad surprise—
Surprise and love, and hope and pride,
With many a glowing thought beside.

"The light that lies in Leila's eyes
No trick of vain allurement tries,
But sheds a soft and constant beam,
Like moonlight on the tranquil stream;
Yet as the seas from pole to pole
Move at yon gentle orb's control,
So tumults in my bosom rise
Beneath the charm of Leila's eyes.
Fair Leila's eyes, fair Leila's eyes, etc.

"Fair Leila's eyes I'd gladly shun
The flaunting glare of Fortune's sun,
And to the humble shade betake,
Which they a brighter heaven could make.
The wildfire lights I once pursued
Should ne'er again my steps delude:
I'd fix my faith, and only prize
The steadfast light of Leila's eyes.
Fair Leila's eyes, fair Leila's eyes, etc."

Improving in his prospects, Robert removed with his bookselling business to Hanover street, where the conducting of his establishment fell partly on James, who had been reared as a coadjutor. In 1826, following next after the "Rhymes," appeared his "Picture of Scotland," a work in two volumes, the materials of which had been gathered together by a succession of toilsome peregrinations over a large part of the country, exclusively of previous historical studies. An ardent attachment to Scotland had led him to undertake the work; for, as he said, "Instead of the pilgrim's scallop in my hat, I took for motto the glowing expression of Burns': 'I have no dearer aim than to make leisurely journeys through Caledonia; to sit on the

fields of her battles; to wander on the romantic banks of her streams; and to muse by the stately towers of venerable ruins, once the homesteads of her heroes.'" In the main topographical, the book comprehended an interlarding of native anecdote and humor, along with illustrations of the manners of a past age. "The reclamation of that which is altogether poetry—the wonderful, beautiful past," he adds, was a primary object of the book, being "conscious and certain that, though many of his own generation may not give him credit for so exalted a purpose, the people who shall afterwards inherit this romantic land will appreciate what could not have been preserved but with a view to their gratification."

The "Picture of Scotland" was followed in rapid succession by several works which still further extended Robert's popularity as a writer. The quantity of literary work of one kind or other which he went through during some years at this period was astonishing, more particularly when we know that he continued to give a certain degree of attention daily to business. Indeed, with all his love of letters, he by no means relied on his efforts with the pen. He used to repeat a sage remark of Scott, that literature is a good cane to walk with, but not a staff to lean upon; an observation too apt to be neglected by young and inexperienced writers.

Archibald Constable, in his attempts to revive a publishing business after the catastrophe of 1825, happily struck out the idea of a series of cheap popular works, by which employment was found for a number of persons with literary tastes and of tried ability. Robert was one of the earliest so pressed into the service of "Constable's Miscellany." In 1828, appeared his "History of the Rebellion of 1745," in two volumes; at the close of the same year was issued his "History of the Rebellions in Scotland under the Marquis of Montrose and others from 1638 to 1660," in two volumes; this was followed, in 1829, by a "History of the Rebellions in Scotland under Viscount Dundee and the Earl of Mar in 1689 and 1715," in one volume; and finally, in 1830, he contributed the "Life of James I," in two volumes. Such, however, was not the entire amount of his literary labor. Intermediately, he edited "Scottish Ballads and Songs," in three volumes (1829), and the "Biography of Distinguished Scotsmen," in four volumes. Besides which, he furnished Mr. Lockhart with a variety of valuable notes for his "Life of Robert Burns."

Of all these works, that which attained the greatest and most enduring popularity was the "History of the Rebellion of 1745," the materials of which were gathered from the principal sources of information available in 1827. Several families, whose ancestors had been compromised in the insurrection, obligingly furnished traditional anecdotes for the work, which thereby assumed a character considerably different from one consisting of dry historical annals. While received with general approbation, the "History of the Rebellion," from the *feeling* with which it was written, led to a notion that it

was the work of a Jacobite. Such seems to have been the opinion of a writer in the *Quarterly Review*, who, in reviewing Lord Mahon's "History of England" (1839), refers to the "many curious details, gleaned with exemplary diligence, and presented in a lively enough style," in the histories of the rebellions of 1715 and 1745, by "Mr. Robert Chambers, a bookseller and antiquary of Edinburgh," adding: "His Jacobitism seems that of a rampant Highlander; and we doubt not, had he flourished at the proper time, he would have handled his claymore gallantly; nor are we at all surprised to hear that he enjoys considerable popularity among certain classes in Scotland; but we can not anticipate that these historical performances will ever obtain a place in the English library."

To conclusions as to his supposed Jacobitism, my brother made some demur. He declared that he "disapproved of the insurrection of 1745, and held that it undoubtedly was a crime to disturb with war, and to some extent with rapine, a nation enjoying internal peace under a settled government. But, on the other hand, it was evident that those who followed Charles Edward acted according to their lights, with heroic self-devotion, and were not fairly liable to the vulgar ridicule and vituperations thrown upon them by those whose duty it was to resist and punish them. Accordingly, it was just that the adventures of the persons concerned should be detailed with impartiality, and their unavoidable misfortunes be spoken of with humane feeling." Such is the vindicatory remark he makes in a prefatory note to the seventh edition of the work, issued as lately as 1869; and in the present day, few will be disposed to challenge the accuracy of this view of the matter. Whether this historical performance has obtained a place in what the reviewer is pleased to call "the English library," I am not prepared to say, further than that, without adventitious aid, it has been very extensively diffused in all parts of Great Britain, and remains, to appearance, a generally received work on the subject.

The new edition of the "History" just referred to has been so greatly extended as to be almost a new work. The prolific source of the fresh information that was obtained, was a collection of ten volumes in manuscript, styled on the title-pages the "Lyon in Mourning," which had been prepared by the anxious care of the Right Rev. Bishop Forbes, of the Scottish Episcopal Church, and who was settled as a minister of that communion in Leith at the middle of the eighteenth century. Laboring under the suspicion that he was a Jacobite dangerous to the reigning dynasty, he was confined in Edinburgh Castle during the rebellion, and only liberated in 1746. By this means he was saved from the disasters of the falling cause, and brought into leisurely communication with a number of the insurgents who were seized at various times and placed in confinement along with him. After regaining his liberty, Bishop Forbes prosecuted the design of collecting from the mouths and pens of the survivors of the late enterprise such narratives, anecdotes, and memo-

rabilia as they could give from their own knowledge, or as eye-witnesses, respecting this extraordinary historical episode. The whole of the trustworthy information so acquired was written on octavo sheets, which in the end formed volumes; and nothing can exceed the neatness, distinctness, and accuracy with which the whole task appears to have been performed. In allusion to the woe of Scotland for her exiled race of princes, the ten volumes composing the work were bound in black, and styled the "Lyon in Mourning." The poor bishop died in 1776, leaving the collection to his widow, who, after many years, sold it to Sir Henry Stewart of Allanton, who had been induced to turn his attention to the subject; and he commenced a work designed to present a historical review of the different attempts made to restore the Stewart family to the throne. The work had been carried a certain length, when it was interrupted by ill-health, and permanently laid aside. On a visit to Allanton House, in 1832, my brother first heard of the "Lyon," and was so fortunate as to have it assigned to him for literary purposes. The result (1834) was the "Jacobite Memoirs of the Rebellion of 1745." But from the wide-spread information contained in the collection, were drawn innumerable particulars of a deeply interesting kind for the revised edition of the "History."

Between 1823 and 1835, Robert amused himself, and gave relief to his feelings, by occasionally writing poetical pieces, which he collected and printed in a volume for private circulation. The following is one of these effusions, purporting to be written July 1829, in reference to the very amiable young lady, Miss Annie Kirkwood, whom he married in December of that year.*

THOU GENTLE AND KIND ONE.

"Thou gentle and kind one,
Who com'st o'er my dreams
Like the gales of the west,
Or the music of streams;
O softest and dearest,
Can that time e'er be,
When I could be forgetful
Or scornful of thee?

"No! my soul might be dark,
Like a landscape in shade,
And for thee not the half
Of its love be displayed,
But one ray of thy kindness
Would banish my pain,
And soon kiss every feature
To brightness again.

* December 7, 1829.—Robert Chambers married to Anne Kirkwood, only child of the late John Kirkwood, Custom-house, Glasgow.—*Newspaper Notice.*

"And if, in contending
With men and the world,
My eye might be fierce
Or my brow might be curled;
That brow on thy bosom
All smoothed would recline,
And that eye melt in kindness,
When turned upon thine.

"If faithful in sorrow,
More faithful in joy—
Thou shouldst find that no change
Could affection destroy;
All profit, all pleasure
As nothing would be,
And each triumph despised,
Unpartaken by thee."

Always ready to lend a helping hand to the promotion of any literary object connected with his native country, my brother, in 1830, contributed historical and descriptive notices to a work styled the "Picture of Stirling." An opportunity was thereby afforded of giving an account of an object formerly of national importance, known as the "Stirling Jug,"—such having been the legal standard for the old Scotch pint (equal to about an English quart), which is referred to, as some may perhaps think, rather too frequently in the verses of Burns and others. As little is popularly known regarding the history of the Stirling Jug, we may copy it for general edification:

"By an act of the Scottish Parliament, in 1437, various burghs in the Lowlands were appointed to keep the various standard measures for liquid and dry goods, from which all others throughout the country were to be taken. To Edinburgh was appointed the honor of keeping the standard ell; to Perth the reel; to Lanark the pound; to Linlithgow the firlot; and to Stirling the pint. This was a judicious arrangement, both as it was calculated to prevent any attempt at an extensive or general scheme of fraud, and as the commodities to which the different standards referred were supplied in the greatest abundance by the districts and towns to whose care they were committed; Edinburgh being then the principal market for cloth, Perth for yarn, Lanark for wool, Linlithgow for grain, and Stirling for distilled and fermented liquors. The pint measure, popularly called the Stirling Jug, is still kept with great care in the town where it was first deposited four hundred years ago. It is made of brass, in the shape of a hollow cone truncated. . . . . The handle is fixed with two brass nails; and the whole has an appearance of rudeness, quite proper to the early age when it was first instituted by the Scottish Estates as the standard of liquid measure for this ancient bacchanalian kingdom. It will be interesting to all votaries of antiquity to know that this vessel, which may in some measure be esteemed a

national palladium, was rescued, about eighty years ago, from the fate of being utterly lost, to which all circumstances for some time seemed to destine it. The person whom we have to thank for this good service was the Reverend Alexander Bryce, minister of Kirknewton, near Edinburgh, a man of scientific and literary accomplishment much superior to what was displayed by the generality of the clergy of this day. Mr. Bryce (who had taught the mathematical class in the college of Edinburgh during the winter of 1745–46, instead of the eminent Maclaurin, who was then on his death-bed) happened to visit Stirling in the year 1750; when, recollecting that the standard pint jug was appointed to remain in that town, he requested permission from the magistrates to see it. The magistrates conducted him to their council-house, where a *pewter* pint jug was taken down from the roof, whence it was suspended, and presented to him. After a careful examination, he was convinced that this could not be the legal standard. He communicated his opinion to the magistrates; but they were equally ignorant of the loss which the town had sustained, and indisposed to take any trouble for the purpose of retrieving it. It excited very different feelings in the acute and inquiring mind of Dr. Bryce; and resolved, if possible, to recover the valuable antique, he immediately instituted a search; which, though conducted with much patient industry for about a twelvemonth, proved, to his great regret, unavailing. In 1752, it occurred to him that the standard jug might have been borrowed by some of the coppersmiths or braziers, for the purpose of making legal measures for the citizens, and, by some chance, not returned. Having been informed that a person of this description, named Urquhart, had joined the insurgent forces in 1745; that, on his not returning, his furniture and shop utensils had been brought to sale; and that various articles, which had not been sold, were thrown into a garret as useless, a gleam of hope darted into his mind, and he eagerly went to make the proper investigation. Accordingly, in that obscure garret, buried underneath a mass of lumber, he discovered the precious object of his research.

"Thus was discovered the only standard, by special statute, of all liquid and dry measure in Scotland, after it had been offered for sale at perhaps the cheap and easy price of one penny, rejected as unworthy of that little sum, and subsequently thrown by as altogether useless; and many years after it had been considered by its constitutional guardians as irretrievably lost. For his 'good services' in recovering the Stirling Jug, Mr. Bryce was presented with the freedom of the city of Edinburgh, January, 1754."

Towards the close of 1831, Robert made what many may think a bold attempt in literature. It was, by a collection of sayings and anecdotes, "to vindicate, for the first time, the pretensions of the Scottish nation to the character of a witty and jocular, as they are

already allowed to be a painstaking and enlightened race." The book, styled "Scottish Jests and Anecdotes," certainly contained a prodigious array of good things, collected from all imaginable sources, including personal experience in general society. It being the first attempt of the kind, the editor says he felt as if "entitled to some share of that praise which is so liberally bestowed upon discoverers like Cook and Parry, and might expect to be celebrated in after ages as the first man who extended the Geography of Fun beyond the Tweed." The work was pretty well received, and went through two editions; after which, dropping out of notice, it was left for the Very Rev. Dean Ramsay to take up the subject in that more earnest spirit which has insured a great share of public approbation.

That my brother had any merit in discovering that the Scotch are a "witty" people, will be doubted by those who think them incapable of getting beyond a certain species of dry and caustic humor. One thing certainly remarkable in all works purporting to be collections of Scottish jests and anecdotes, is the abundance of droll sayings and doings of parish ministers, beadles, and old serving-men. As a specimen of what Robert collected of this nature, we may give an anecdote referring to what he calls

THE UNLUCKY PRESENT.

"A Lanarkshire minister (who died within the present century) was one of those unhappy persons, who, to use the words of a well-known Scottish adage, 'can never see green cheese but their een reels.' He was *extremely covetous*, and that not only of nice articles of food, but of many other things which do not generally excite the cupidity of the human heart. Being on a visit, one day, at the house of one of his parishioners, a poor lonely widow, living in a moorland part of the parish, he became fascinated by the charms of a cast-iron pot, which happened, at the time, to be lying on the hearth, full of potatoes for the poor woman's dinner, and that of her children. He had never, in his life, seen such a nice little pot—it was a perfect conceit of a thing—it was a gem—no pot on earth could match it in symmetry—it was an object altogether perfectly lovely. 'Dear sake! minister,' said the widow, quite overpowered by the reverend man's commendations of her pot; 'if ye like the pot sae weel as a' that, I beg ye'll let me send it to the manse. It's a kind o' orra' [superfluous] 'pot wi' us; for we've a bigger ane, that we use for ordinar, and that's mair convenient every way for us. Sae ye'll tak a present o't. I'll send it ower the morn wi' Jamie, when he gangs to the schule.' 'O!' said the minister, 'I can by no means permit you to be at so much trouble. Since you are so good as to give me the pot, I'll just carry it home with me in my hand. I'm so much taken with it, indeed, that I would really prefer carrying it myself.' After much altercation between the minister and the

widow on this delicate point of politeness, it was agreed that he should carry home the pot himself.

"Off then he trudged, bearing this curious little culinary article alternately in his hand and under his arm, as seemed most convenient to him. Unfortunately the day was warm, the way long, and the minister fat, so that he became heartily tired of his burden before he got half-way home. In these distressing circumstances, it struck him that if instead of carrying the pot awkwardly at one side of his person he were to carry it on his head, the burden would be greatly lightened. Accordingly, doffing his hat, which he resolved to carry home in his hand, and having applied his handkerchief to his brow, he placed the pot, in inverted fashion, upon his head. There was, at first, much relief and much comfort in this new mode of carrying the pot, but mark the result. The unfortunate minister, having taken a by-path to escape observation, found himself, when still a good way from home, under the necessity of leaping over a ditch which intercepted him in passing from one field to another. He jumped, but unfortunately the concussion given to his person in descending caused the helmet to become a hood; the pot slipped down over his face, and resting with the rim upon his neck, there stuck fast. What was worse of all, the nose, which had permitted the pot to slip down over it, withstood every desperate attempt on the part of its proprietor to make it slip back again; the contracted part, or neck, of the pot being of such a peculiar formation as to cling fast to the base of the nose, although it had found no difficulty in gliding downwardly over it. Was ever minister in a worse plight? What was to be done? The place was lonely; the way difficult and dangerous; human relief was remote, almost beyond reach. It was impossible even to cry for help; or if a cry could be uttered, it would not travel twelve inches in any direction. To add to the distresses of the case, the unhappy sufferer soon found great difficulty in breathing. What with the heat occasioned by the beating of the sun on the metal, and what with the frequent return of the same heated air to his lungs, he was in the utmost danger of suffocation. Every thing considered, it seemed likely that if he did not chance to be relived by some accidental wayfarer there would soon be *death in the pot.*

"The instinctive love of life, however, is omniprevalent. Pressed by the urgency of his distresses, the poor minister fortunately recollected that there was a smith's shop at the distance of about a mile across the fields, which if he could reach he might possibly find relief. Deprived of his eyesight, he acted only as a man of feeling, and went on as cautiously as he could with his hat in his hand. Half crawling, half sliding, over ridge and furrow, ditch and hedge, the unhappy minister traveled with all possible speed, as nearly as he could guess, in the direction of the place of refuge. I leave it to the reader to conceive the surprise, the mirth, the infinite amusement of the blacksmith and all the hangers-on of the *smiddy*, when, at length,

torn and worn, faint and exhausted, blind and breathless, the unfortunate man arrived at the place and let them know (rather by signs than by words) the circumstances of his case.

"The merriment of the people who assembled soon gave way to considerations of humanity. Ludicrous as was the minister, with such an object where his head should have been, and with the feet of the pot pointing upwards, it was necessary that he should be speedily restored to his ordinary condition if it were for no other reason than that he might continue to live. He was, accordingly, at his own request, led into the smithy, by-standers flocking around to tender him their kindest offices or to witness the process of release; and having laid down his head upon the anvil the smith lost no time in seizing and poising his goodly forehammer. 'Will I come sair on, minister?' exclaimed the considerate man of iron in at the brink of the pot. 'As sair as ye like,' was the minister's answer; 'better a chap i' the chafts than die for want of breath.' Thus permitted, the man let fall a blow which fortunately broke the pot in pieces without hurting the head which it inclosed, as the cook-maid breaks the shell of the lobster without bruising the delicate food within. A few minutes of the clear air, and a glass of the guidwife's cordial, restored the unfortunate minister; but assuredly the incident is one which will long live in the memory of his parishioners."

We have not yet completed the review of literary work in which Robert was engaged from about 1829 to 1832. Busied as he was, he undertook the editorship of the *Edinburgh Advertiser*, a newspaper of old standing, as well as an old style of politics, that has been latterly discontinued. This species of employment had the effect of bringing him in contact with some local public characters, and of widening his acquaintanceship among the political party who viewed the proposed changes in the constitution with distrust. It may be conceived that his connection with the old *Advertiser* was not uncongenial with the feelings of Sir Walter Scott. But between the great novelist and my brother personal intercourse had ceased, for Sir Walter was now an invalid at Abbotsford. Letters, however, passed between them, as is observable from Robert's private papers, sometimes in reference to literary matters, and on other occasions concerning the introductions of strangers. A Miss MacLaughlin, with musical acquirements, having visited Edinburgh, besought for herself and her mother an introduction to Sir Walter, which being granted, the following letter was shortly afterwards received, dated from Abbotsford, March 7, 1831:

"My dear Mr. Chambers,—I was quite happy to see Miss MacLaughlin, who is a fine, enthusiastic girl, and very, very pretty withal. They—that is, her mother and she—breakfasted with me, though I had what is unusual at Abbotsford, no female assistance. However,

we got on very well, and I prepared the young lady a set of words to the air of 'Crochallan.' But although Miss M. proposed to leave me a copy of the Celtic harmonies, I suppose the servant put it in her carriage. Purdie is the publisher. Will you get me a copy of the number containing 'Crochallan,' with a prose translation by a competent person, and let me know the expense?*

"I fear I can not be of use to you in the way you propose, though I sincerely rejoice in your success, and would gladly promote it; but Dr. Abercrombie threatens me with death if I write so much. I must assist Lockhart a little, for you are aware of our connection, and he has always shown me the duties of a son; but except that, and my own necessary work at the edition of the Waverley Novels, as they call them, I can hardly pretend to be a contributor, for, after all, that same dying is a ceremony one would put off as long as he could. . . . . I am, dear Mr. Chambers, very faithfully yours,

"WALTER SCOTT."

The next letter received, which has the date Abbotsford, August 2, 1831, bears a melancholy record of Sir Walter's growing bodily weakness:

"DEAR MR. CHAMBERS, — I received your letter through Mr. Cadell. It is impossible for a gentleman to say no to a request which flatters him more than he deserves. But even although it is said in the newspapers, I actually am far from well. I am keeping my head as cool as I can, and speak with some difficulty; but I am unwilling to make a piece of work about nothing, and instead of doing so I ought rather to receive the lady as civilly as I can. I am much out, riding, or rather crawling about my plantations in the morning when the weather will permit; but a card from Miss Eccles will find me at home, and happy to see her, although the effect is like to be disappointment to the lady. I am your faithful, humble servant.

"I have owed you a letter longer than I intended; but I write with pain, and generally use the hand of a friend. I sign with my initials as enough to represent the poor half of me that is left, but am still much yours, W. S."

This appears to have been the last letter received by my brother from Sir Walter Scott.

* The origin of the beautiful song of *Chro Challin* takes a conspicuous place in the traditions of the Scottish Gael. Chro Challin is the *Cattle of Colin*. In the song, a maiden, anxious to make out a favorable case for her lover, who is a hunter, describes him as possessing large herds; but does this in a metaphorical manner, so that, in the long run, it turns out that his cattle are only the deer of the mountains. . . . Other romantic origins are given to the song and air, which still charm the Highland ear.—R. CHAMBERS, in *Land of Burns*.

Robert's success with the "Traditions," and my own progress in the new field I had selected, left nothing to regret. The "Dark Ages" had vanished into the dim past. The mediæval period had dawned. There was no longer a fierce skirmishing with difficulties, but there was much less drollery. As men get up in the world they, as a rule, take on the gravity which by immemorial usage pertains to what are called the respectable classes. They are likewise apt to part convoy with a number of individuals who have hitherto kept within hail. The reason is plain. Each, from choice, pursues his own line of navigation. Mankind are roughly divided, in unequal proportions, into two sects—those who consume day by day all they can lay their hands on, thinking no more of what is to be their fate in a year or ten years hence than the lower animals; others—a much less numerous body—who are always looking ahead and acting with less or more regard to the future. What impressive examples one could produce of these differences of taste! Two young men, of good education, start in life with pretty equal chances of success. One of them rises by gradations to be Lord Chancellor: where do we find the other? Seated with his back to the wall, drawing figures in red and white chalk on a smooth piece of pavement, in the hope of retiring to his evening haunt with the sum of half a crown in sixpences and half-pence, to be spent probably in the felicity of a carouse. That, we may presume, is the line of life he has deliberately preferred. He had worked for beggary, and he has got it. When a man will make no sacrifice of his pleasures, but sets his heart on freshly beginning the world every day, or every week, it is not difficult to do so. The facility with which the thing can be done explains much of what seems to perplex society and drive it almost to its wit's end.

In the strange complication of human affairs, luck, no doubt counts for something; but have we properly considered what is luck? Surely, the business of life can not be said to be conducted on the haphazard principles of a game of roulette! Is there no prearrangement, no Providential design, leading by a series of circumstances to results which have been hitherto shrouded from our finite intelligence? To be lucky, as it is called, one requires to make some reasonably strenuous exertion—probably to make some unpleasant sacrifices. Erskine might not, perhaps, have risen to be Lord Chancellor but for the fortunate sprain which caused him hastily to relinquish an intended visit, and return home, where he was waited on by a worthy old maritime gentleman, whose intricate case he took up, mastered, and carried through triumphantly. But we must bear in mind that he had by previous and toilsome exertion, and no little self-sacrifice, prepared himself to benefit by the fortunate accident which brought him into

notice.* It is a pity that one has to make so many sacrifices of inclinations, to *thole* a good deal, possibly to relinquish some amusements, in order to attain any thing like permanent comfort; but so it is, and ever will be. When my brother and I got emancipated from the Dark Ages, it was our fate to proceed on a course wholly different from that which several persons we had known were pleased to pursue. Their policy being to live all for the present, and not for the future, sent us naturally in opposite directions. Apparently wishing to end as they began, they spent daily or weekly all they earned, and were ever at the same point of progress. They doubtless, however, enjoyed themselves to their own satisfaction, and there we must leave them.

Relaxing no effort, five to six years had effected a beneficial change of circumstances. We were both, in a sense, raised to a higher platform, and had, indeed, reached that social status, if not something above it, which had been lost by the family calamity of 1812. It seemed as if the gales of fortune were at length about to blow steadily in our favor, without disturbance from any cross-current. We were not, however, to be let off so easily. Fate had one more trial in reserve.

My father had come to live in Edinburgh. Afflicted with dreary recollections, sometimes half-distracted, and ready to catch at delusive hopes, he plunged into proceedings which I can only refer to with any degree of patience, from the insight which they afforded of new and diverting phases of character. Among his dreams of the past, he raked up the fancy of trying to recover a piece of property which had long ago belonged to the family, but had somehow been suffered to drift, improperly, as was alleged, into other hands. The property in question was a wretched old house, perhaps not worth 200*l*, and the proposal of fighting for it in the Court of Session was repugnant alike to my brother's feelings and my own. Unfortunately, any remonstrances on our part, and also strong objections urged by my mother, were unavailing. The suit was commenced and its history might almost furnish materials for a tragi-comic drama.

The prime adviser in the case was a person who, from his reputed knowledge of law, was held in high esteem by certain classes of people. He was a neat little man, in drab breeches and white woolen stockings, who labored under the infirmity of a stiff, crooked knee, on which account he walked very oddly, by successive jerks, with the help of a stick. Having been bred in the office of a country solicitor, this erudite person had formed an acquaintance with legal forms and technicalities, and adding to this a theoretic knowledge of Scotch law from Erskine's "Institutes," he was qualified, as many thought, for acting as counsel to those who stood in need of legal advice. With his acquirements, it was perhaps only as an act of

* Campbell's *Lives of the Chancellors.*

considerable condescension that he made his living as a dealer in wines, spirits, and other liquids, in an inferior part of the city. As a friend of the oppressed, the little man had much pleasure in bestowing his knowledge of the law gratis. He took no fees. All he expected from those who favored him with their company in his pleasant back-room was, that they would pay for what liquor they thought fit to call for, and that certainly was not unreasonable.

The fame of this legal oracle traveled beyond the narrow precincts of the locality. His renown as a gossip on legal and other matters attracted the occasional visits of a club of convivialists, who were in the habit of spending an hour or two daily in discussing public affairs over some inspiriting liquid delicacies. These assemblages, wherever they happened to be held, were greatly more amusing than gatherings of this kind usually are, for they were open to all who, with a little time at their disposal, could add to the hilarity of the company. The meetings were sometimes honored with the presence of certain officials from the Excise Office, whose duties, consisting mainly of drawing their salaries and reading the morning's newspaper, admitted of this kind of recreation. Among this set there were two or three who shone as stars of the first magnitude. It is true they related the same jokes perhaps daily for years, but as the sederunt was a variable body, and as it was a standing rule in this club of convivialists to laugh at every whimsicality, no matter how often repeated, the old jokes were always as good as new.

One of these assiduous government officials whose presence was always peculiarly acceptable, was a Mr. Moffat, a genteelish, middle-aged personage, with a red nose, dressed in a white neckcloth and a blue coat with yellow metal buttons, and who was always licking his lips, as if he had just partaken of some delicious repast. He had one story about himself, which he was ordinarily called on to relate:

"By the by, Mr. Moffat, that was a curious anecdote you told us one day about the Board of Excise; I am sure the gentlemen present would like to hear it."

"O, by all means; if I can remember it rightly." Then brightening up, taking a sip at his potation, and licking his lips with more than usual vehemence, he would proceed.

"Well, gentlemen, you must know, I was one day in my room at the office. It was a busy day with me. I had to sign several papers brought to me by Grubb. After that was over, when I was just sitting down to the newspaper, a message was brought, requiring my presence at the Board. I could not imagine why I was sent for. Surely, thinks I, it can not be on account of going out a few minutes daily for necessary refreshments. However, there was no time to consider. So off I went to the Board-room, trusting to put as good a face on the matter as possible. Well, to be sure, there were the whole of the Commissioners—a very full meeting that day—seated around the table covered with green cloth, each of them with

fresh pens and sheets of paper before him, as if about to take down a deposition. I am going to be pulled up, thinks I. Things certainly looked very bad. My feelings were a little calmed when the chairman—a polite man, exceedingly so—requested me, in a softened and pleasant tone of voice, to take a chair near him. Well, gentlemen, I sat down accordingly, making a bow to the Board. The chairman then addressed me: 'Mr. Moffat, the Commissioners have had a great difficulty under their consideration. It is a thing of no small importance, for it concerns the interest of the Department. Some of the Commissioners incline to one view of the matter, and some to another. In short, not to keep you in suspense, that which puzzles the Board is the pronunciation of a word—a very important word; not, indeed, that I am puzzled, for my mind is clear upon the subject. To settle the matter definitely, we appeal to you. Knowing your scholarly acquirements, and more particularly your acquaintance with the drama and the correct elocution of the stage, we have agreed to abide by your decision.' Here, of course, I again bowed. 'Yes,' continued the chairman, 'we put ourselves into your hands. To be perfectly fair, I will not utter the word, but write it down, letter by letter, thus:

R-e-v-e-n-u-e,

and leave you to determine, how it should be pronounced.' I felt honored. I had for years studied the word. I had made up my mind about it. Bowing once more to the Board, and turning towards the chairman, I said: 'Sir, I feel the importance of the occasion. That word is certainly a very important word. It is a word in which the whole nation has a very great interest. Knowing especially its value to the Department, I have for years made it my study, and will state the opinion at which I have arrived. The common or vulgar pronunciation of the word is Rev'enue; but that is decidedly incorrect. The true pronunciation, which *I* hold by, is that of John Kemble—namely Reven'ue—a heavy emphasis to be laid on the *n*.' Instantly there was a shout of applause from various members of the Board, and the chairman, who was vastly pleased, said to me most emphatically: 'Thank you, Mr. Moffat; you and I must eat mutton together.'"

Influenced by frequent and animated consultations with the smart little man with the crooked knee, and convinced that he had Erskine on his side, my father passed into the hands of an *habitué* of the back-room, a man of advanced age, who wore a brown duffel great-coat and a low-crowned hat, whose function consisted in bringing cases to certain practitioners before the supreme courts. I saw him once or twice. In character and appearance he reminded me of the miserable order of professionals whom I had seen in the Old Tolbooth. His coarse features possessed the singular faculty of appearing to

smile in the lower department, while they were grave and thoughtful above, the line of division of the two expressions being across from the point of the nose. My father was introduced by this legal jackal to an operator in whom he said he had every confidence; having first assured himself that there were persons behind backs who would be good for the expenses. At this time there were practitioners in Edinburgh well qualified in the art of fleecing. One of them was known in the Parliament House under the jocose name of Pillage, while another of the same category was called Plunder. Each had a son who helped in his father's business, and hence people pleasantly spoke of Old Pillage and Young Pillage, and Old Plunder and Young Plunder. Both firms were believed to be one concern. They were in some sort a confederacy, which, through the devices of scouts, like the gentleman in the brown duffel great-coat and low-crowned hat, procured the conducting of cases *pro* and *con;* and they would jointly so manage matters through a dragged-out process, for which the forms of court offered opportunities, that the respective litigants did not get a final decision till not another shilling could be wrung from them.

In the present unhappy case the end came with more than usual celerity, for means soon ran dry. My father, as we all foresaw, lost his suit, and my brother and I, as had been safely prognosticated, had to stand in the breach and incur obligations, in order to avert certain unpleasant consequences. It is sickening to think what sufferings are incurred through the follies of litigation. Money that I could ill spare was swept away, and Robert lost a large part of what he had realized by the "Traditions," as much, I think, as about two hundred pounds. The only grudge entertained on the subject was, that the money should have been sacrificed so unworthily. These losses kept us back one or two years.

It was about this time that the family renewed acquaintance with a clerical functionary, who, through his wife, was somehow, in a remote degree, related to us. I recollected seeing him among the habitual visitors of the Tolbooth, where, with the reputation of being a worthy man, who had been unfortunate in life, and always took a lenient view of human infirmities, he was held in general esteem. He held the office of Morning Lecturer in one of the city churches, an antiquated benefice in the gift of the magistrates and council. His duty was to preach early in the Sunday mornings, for which he received some thirty pounds a year. Since 1639, when the office was instituted by the bequest of David Mackall, a pious citizen, the fancy for going to church before breakfast had so greatly fallen off that the congregation consisted usually of only the precentor and a respectable spinster of middle age, who occupied a floor in the Lawnmarket, and who, of all the inhabitants of Edinburgh, appreciated the Morning Lecturer for his discourses.

To judge from his bulk, gravity of aspect, and tastefully powdered

white hair, this amiable divine might have stood high in ecclesiastical matters. Of no point in his personal appearance, however, was he so proud as his nails. These nails of his, as every body soon learned from his wife, were a singularly precious inheritance. They had come into his family a long time ago through his great-grandmother, an heiress, who had married, her friends thought, beneath her. In some of her descendants, "the nails" cast up, and in others they did not. Our friend was one of the lucky owners; and with his handsome token of aristocracy, as also a certain solemnity of features, his parents resolved to make him a minister. Not very fortunate in his career, it was well for him that he could derive some consolation from the points of his fingers, seeing that the support of a family and the rent of a dwelling in an upper floor had to be encountered, with no more to depend on in the regular course of things than the small salary assigned to him by the civic corporation. As to that salary, it was the Morning Lecturer's fixed opinion that he was shamefully cheated. He always maintained that the magistrates and council had grossly misappropriated Mackall's bequest, and that, if he had his due, he should, at the very least, have a thousand a year. Before his face, people condoled with him about his misusage; but, excepting perhaps the aforesaid spinster, no one actually thought him to be underpaid.

So long as the Old Tolbooth lasted, the lecturer possessed a pleasant forenoon resort, where there was always something doing in the way of general conviviality. Mingling in the festivities of the West Enders, he was in reality among friends and customers whom he served in the clerical line of business. For years he had managed to eke out his means of livelihood by baptizing the children of persons who did not claim membership with any of the ordinary congregations, and who had a special dislike to answering troublesome questions. His flock, in this respect, were a scattered body all over the Old Town, but with a certain density about the Fleshmarket Close and the head of the Canongate.

In undertaking jobs for his employers, this accommodating divine preferred visiting them at their own homes in the evening, at which time, under the blaze of candle-light, and with the mellowing influence of supper, the heart is more beneficently inclined than during the day. It being contrary to rule in Scotland to receive fees for religious solemnities, this poor clergyman resorted to a device, which for a time mitigated the distresses of the household. The Being who tempers the wind to the shorn lamb, gave him a child, who was for a time the daily provider of his family. This child, Bobby, was a boy in petticoats, who had the misfortune to have a bad squint, but by raising emotions of compassion, the squint was rather a good thing than otherwise. As soon as Bobby was able to toddle about, he invariably accompanied papa on his baptismal excursions. Before setting out, his mother provided him with a small but conspicuous

pocket of colored silk, which she hung outside his dress, ready for receiving any money-present which might be munificently slipped into it, in requital of the religious ordinance that was performed.

It was an interesting thing to see the pair, father and child, sally out, after the street-lamps were lit, on a mission to the foot of some long, dingy close, and there to climb up some long, crooked stair,—the father stumping on his faded tartan cloak, with his cane in one hand, and holding Bobby with the other,—both gleeful of what would possibly be deposited in that pretty little pocket, and of what pleasure there would be in taking it home to mamma. Bobby relished these expeditions into the by-corners of the city, although the long dark stairs were almost too much for his little legs; and when kept late he was apt to get sleepy. But he was usually treated to something nice by the hostess, and had the satisfaction at departure of finding a crown-piece—occasionally half a guinea, wrapped in a piece of paper—lying at the bottom of his pocket, about which there was not a little sprightly talk on the way home.

I heard the Morning Lecturer speak of a frightful piece of villainy that had been perpetrated on Bobby, amounting, as he thought, to worse than sacrilege. On one occasion, the reward slipped into the child's pocket was a coin wrapped in paper, which, on inspection at a street lamp, proved to be only a farthing, a circumstance which we may take as indicating the class of persons to whom these spiritual services were occasionally rendered. On the whole, the produce of the child's wallet for several years kept the wolf from the door; and it was a great grief to the family that Bobby at length grew too big for petticoats, and also too big to be taken uninvited to baptisms. What with the removal of that dear old haunt, the Tolbooth, and afterwards Bobby's overgrowth for financial purposes, it was a sad business for our poor friend, whose last days in his upper flat were, as we had occasion to know, not quite so comfortable as befitted one with such a superior quality of nails, or who was so useful a member of the clerical profession.

Now came a domestic affliction. My unfortunate father never got over the loss of his lawsuit, and the way he had been led into it by the versatile genius with the crooked knee, and his coadjutor in the duffel great-coat. Under his accumulation of disasters and fresh cankering reminiscences, ascribable in a great degree to his excessive simplicity of character, he died in November, 1824, in the week of those conflagrations of which Robert has given some account.

Shortly after the issue of the "Traditions," it became expedient for me to relinquish printing, and to adhere more exclusively to other branches of business including some undertakings of a literary nature. The parting with my poor little press, which had latterly been superseded by newer mechanism, was not unaccompanied with that kind of regret with which one bids farewell to an old and cherished companion. It is pleasing, however, to know that it did not suffer de-

struction, but was purchased by a person in Glasgow, who aspired to begin as a printer in a way similar to myself; and for any thing I know to the contrary, this little machine may still be creaking and wheezing on the banks of the Clyde, for, like many who are afflicted with asthma, it possessed a wonderful degree of vitality.

Partly with the design of furnishing a companion to the "Picture of Scotland," I commenced a work, purporting to describe the institutions, secular and religious, peculiar to our northern kingdom, and which I styled the "Book of Scotland." The work required considerable research as well as personal knowledge, and the task was one for which I avow myself to have been ill qualified. I sold it to a publisher for thirty pounds. It is now very properly forgotten. Independently of its imperfections, the subjects treated of would now stand in need of a new elucidation, in consequence of innumerable recent legislative alterations. Poor as was this production, it procured me the honor of being employed along with Robert to prepare the "Gazetteer of Scotland" for a publisher; the price to be paid for it being a hundred pounds. It was to be a compilation from all available and trustworthy sources, along with such original matter as could reasonably be infused into it. To impart a sufficient degree of freshness, I made several pedestrian journeys to different parts of the country, gathering here and there particulars which I thought would be of value.

In these excursions I had necessarily to husband time and exercise a pretty rigorous economy. Lodging at the humbler class of inns, my expenses did not exceed a few shillings a day. My object was to see as many places as possible, and fix their situation and appearance in my mind. I took notes only of dates, inscriptions, and other matters demanding great precision. I now found the value of cultivating the memory, and of having learned to rely on recollections of places which I had seen. From practice, I acquired the art of summoning up the remembrance of scenes and places which I had visited, and persons I had seen, even to very minute particulars. Gathering and storing up observations in this way, I traversed Fife and the lower parts of Perth and Forfar shires. My longest stretch in one day was from the neighborhood of Cupar to Edinburgh, by Lochlevin, Kinross, Dunfernline, Inverkeithing, and Queensferry, a stretch of forty miles, varied by the passage of the ferry. It was a delightful ramble in a long day in June, which left the most pleasing recollections, notwithstanding that I was a little footsore on reaching home. By such means as this I was able to impart some originality to the ordinary descriptions of the "Gazetteer."

Although my brother was ostensibly associated with me in this production, his duties were chiefly those of final supervisor of the press. As the work was a thick octavo volume, double columns, in small type, the mere penmanship of it extended to ten thousand pages, many of which I wrote twice or thrice over, to insure accuracy. My

share of the price of copyright was seventy pounds. This book was a great literary exercise, and as such, remuneration was of inferior consequence. I wrote the whole of it, as I had previous productions, behind the counter, amidst the involvements and interruptions of ordinary business, by which means I acquired a kind of facility of dropping and resuming a subject at a moment's notice, which proved of considerable value. To finish the work at the appointed time, I was frequently compelled to remain at the desk for two or three hours after closing up for the night. The labor incurred by so much thinking and writing, together with close application otherwise, unameliorated with any sort of recreation, brought on an illness which for some time assumed a threatening appearance. But this was hapily got over without any permanently bad effects.

The publication of the "Gazetteer" helped, perhaps, to bring me a little more into notice; but if local notoriety was desirable, that was incidentally effected by writing a series of letters in an Edinburgh newspaper, concerning that species of civic administration which terminated shortly afterwards in a financial collapse. These letters bore my name, for it has been with me a rule in life never to write an anonymous letter. If ever there was an instance of the value of this species of candor, it was on the present occasion. The letters engaged public attention, and when issued in a collected form in a small pamphlet, the sale was immense. On looking back to this exploit, I feel that the strictures were much too severe, and visited on individuals that which properly belonged to a system.

Though these and some other literary exercises were of no pecuniary advantage adequate to the time and trouble spent upon them, they were immensely serviceable as a training, preparatory to the part which it was my destiny to take in the cheap literature movement of modern times. It is regarding that movement, and the change which it wrought in my brother's as well as in my own course of life, that something is now to be said.

CHEAP LITERATURE MOVEMENT OF 1832.

Not the least curious thing about the rise of cheap literature in the form of detached sheets in our times is, that it is in reality a "Renaissance." Differing only in degree, it is a revival of what had long passed away and been popularly forgotten. Let us look a little into the matter historically, saying a few words, in the first-place, regarding the oldest cheap literature of all,—the Penny Chap Books of our simple-minded forefathers. Like the corresponding Folk Lore of the Germans, the old Chap Books, consisting of coarsely printed sheets, duodecimo, embellished with equally coarse frontispieces, aimed at no sort of instruction, such as we now understand by the term; yet they furnished amusement to the humble fireside. They appealed to the popular love of the heroic, the marvelous, the pathetic, and the humorous. Many of them were nothing more than an embodiment

of the legends, superstitions, ballads, and songs, which had been kept alive by oral tradition before the invention of printing. Superstitions, as may be supposed, formed the stable material. So numerous were the books for telling fortunes, discovering and averting witchcraft, narrating the appearance of ghosts, prognosticating the weather, interpreting dreams, and explaining lucky and unlucky days, that the extent and depth of public credulity must have been immense.

Objectionable and pitiable in character as were the greater number of Chap Books, miserable as they were in appearance and aim, they were nevertheless to be taken as illustrative of popular intelligence and taste during the lengthened period in which they bore rule; and as such, reflect a certain light on the social progress of Great Britain. It would seem, indeed, that just as a crop of worthless indigenous plants grow up on a meager uncultivated soil, so do Chap Books spring up in the mental infancy of the common people, and continue till displaced by a literature equally entertaining, but of a standard which corresponds to a state of higher advancement. Another consideration suggests itself. A country may be renowned for its scholarship, its science, its exquisite proficiency in the fine arts, and yet not be beyond its Chap Book era. Such is the case at this moment in Italy, where took place the revival of letters, where universities have longest existed, and where sculpture and painting have for ages been carried to an enviable pitch of excellence. With startling discordance, under the very shadow of the university of Padua, the cathedral of Milan, and the glorious galleries of the Uffizi at Florence, a Chap Book literature is copiously dispersed, as primitive in character and as poor in appearance as any thing which satisfied our illiterate peasantry of a past age. The moral that may be drawn from the fact of a country being rich in universities, and at the same time abounding in books for interpreting dreams and expounding lucky numbers in the lottery, will occur to every one.

Pervading town and country as a literature in request among all the humbler classes who could read, English and also Scottish Chap Books were extirpated by no edict, but disappeared slowly through the united effects of education, and a demand for something equally exhilarating and much more comformable to improved manners and feelings. Some circumstances, not to be referred to without regret, conspired to prolong the Chap Book era beyond the time at which it would probably have vanished. Newspapers, which began to assume a determinate form as miscellaneous intelligencers about the period of the Restoration, attained to a considerable standing and popularity shortly after 1695, when they were relieved from the licensing act that had hitherto oppressed them. The press, now in effect free, and the public mind entering, as it were, on the new phase which had been initiated at the Revolution, we are led by innumerable evidences to conclude that a great change was about to ensue in the matter of popular literature.

We see the dawn of this hopeful transition in the reign of Queen Anne, when much was done, and much more was unscrupulously checked. We now look, not without surprise, on penny newspapers and penny literary sheets, but these are no new thing. There were papers of both kinds, or of a mixed nature, equally low-priced, a hundred and fifty years ago. As yet these cheap papers did not attempt to supersede the Chap Book literature, but can not doubt that such must soon have been the issue. Let me pause for a moment on this outcrop of improved popular prints at the commencement of the eighteenth century.

The first cheap periodical which contained observations written with literary skill was a paper called the *Review*, begun by Daniel Defoe while he was confined in Newgate for publishing his ironical pamphlet, "A Short and Easy Way with the Dissenters." In spite of depressing circumstances, he kept up his *Review* for nine years, Commencing in 1704, it lasted till 1713, and formed the predecessor of, as well as the exemplar for, the *Tattler*, which was begun in 1709 by Richard Steele, assisted by his friend Addison. The *Tattler* appeared three times a week, and was sold for a penny. Soon after its close in 1711, the same writer commenced the *Spectator*, also issued at a penny, but appearing daily. Here, then, to all appearance, was a most auspicious beginning of a cheap and popular literature, of a quality which leaves us nothing to regret, but very much to admire. One can scarcely write with any degree of temper of the overthrow of so promising a department of literature.

As early as 1701, a bill had been brought into parliament to impose a half-penny stamp on newspapers; but such was the clamor raised by the printers, that the scheme was dropped. Beat off for a time, the House of Commons, which had then little sympathy with social progress, successfully renewed the attack on the press, and the 12th of August, 1712, saw the newspapers, as well as the purely literary sheets, issued with a stamp; a half-penny if half a sheet, and a penny if a whole sheet. At the same time, a tax of a shilling was imposed on every advertisement. The pretext for these measures was a wish to stem allegedly impertinent discussions on public affairs. But the good was swept down as well as the bad. The *Spectator*, which had been the vehicle for the noble writings of Addison, immediately experienced a severe reverse. The price was doubled, to meet the new expenses, but the expedient failed. Any rise in the charge for a cheap periodical is generally fatal to its circulation. After a vain struggle, the *Spectator* expired in 1713. No man in the present day would dare to vindicate the policy which thus obstructed the growth of a wholesome popular literature. That there was as yet neither capital nor mechanical appliance to facilitate the issue of large impressions, is admitted. But who can tell what might have ensued under an unrestricted issue of newspapers, and the cheaper kinds of literary sheets?

It is painful to peruse the history of what followed. Such was the growing demand for newspapers, that there were constant attempts, some of them wonderfully successful, to evade the law. In the reign of George II, unstamped half-penny and penny sheets were sold to such an extent by hawkers in the streets of London, that an act was passed in 1743 to suppress this contraband traffic, and any newsboy who dared to offer one of these low-priced intelligencers did so at the risk of three months' imprisonment. Additional stamp and other duties, though in various ways repressive, never utterly quenched the chief popular press, and only postponed its final triumph. Embarrassed with fiscal duties, the news and literary sheets which struggled on through the reign of the first three Georges were, along with the magazines and reviews that sprung into popularity, of no small importance in rearing and primarily affording a maintenance to a brilliant series of eighteenth-century writers: Defoe, Steele, Addison, Johnson, Goldsmith, Smollett, and others.

Although books, chiefly reprints, were in time cheapened and greatly popularized by a series of enterprising publishers, beginning with Alexander Donaldson (father of the founder of Donaldson's Hospital, Edinburgh), and although books of all kinds were rendered generally accessible by circulating libraries, the more aspiring of the humbler orders, particularly those at a distance from towns, still experienced great difficulty in procuring works to improve their knowledge or entertain their leisure hours. Perusing the memoirs of Robert Burns, James Ferguson, Thomas Telford, George Stephenson, and others who, by dint of genius and painstaking study, raised themselves from obscurity to distinction, we perceive what were their difficulties in getting hold of books; such as they did procure being mostly borrowed from kindly disposed neighbors.

Usually, in these untoward circumstances, the mind of the rustic youth took the direction of rhyming in the style of Ramsay and Robert Fergusson. This was specially observable in the cases of Telford, who, while still a journeyman mason in his native Eskdale, contributed verses to Ruddiman's *Weekly Magazine*, under the unpretending signature of "Eskdale Tam." In one of these compositions, which was addressed to Burns, he sketched his own character, and the efforts he made to improve his stock of knowledge by poring over a borrowed volume with no better light than what was afforded by the cottage fire:

> "Nor pass the tentie curious lad,
> Who o'er the ingle hangs his head,
> And begs oe neighbors books to read;
> For hence arise
> Thy country's sons, who far are spread,
> Baith bold and wise."

So matters remained; the protracted French War and its immediate consequences postponing any substantial improvement, at least

as regarded the less affluent classes. From 1815 till 1820, while the marvelous fictions of Scott and the poems of Byron were issuing with rapidity from the press, low priced and scurrilous prints, ministering to the fancies of the seditious and depraved, were also produced in vast numbers. It was an era of transition from war to peace, and as yet society had not composed itself decoriously in the new state of things. There was much to rectify, and little patience was exercised in the process; and, above all, there was little or no harmony among the different classes of the community. So much may be mentioned to extenuate the unscrupulous character of the cheap political prints that swept over the country, which time, free discussion, and various meliorations would have counteracted or extinguished. More abrupt measures, however, were adopted. Certain statutes killed off the whole at a blow in 1820.

No cheap unstamped paper could be safely attempted immediately after this, unless it were purely literary, and abstained from any comment on public affairs. Of this class was the obscure periodical attempted by my brother and myself in 1821. In 1822, a cheap weekly sheet, styled the *Mirror*, was begun in London by John Limbird, but with little pretensions to original writing. It was illustrated with wood engravings, was generally amusing, and so far might be defined as a step in the right direction.

From about this time, benevolently disposed and thoughtful men set about devising methods for improving the intelligence and professional skill of artisans. The School of Arts, the earliest of its class, was founded in Edinburgh in 1821. Two years later, Dr. Birdbeck founded a Mechanics' Institution in London, and another in Glasgow. How views of this nature should now have at length assumed a practical shape would lead to a too lengthened exposition. Reference may merely be made to the influence exercised by the writings of Scott, Campbell, Wordsworth, Southey, and Byron during the early years of the century; likewise to the efficacy of the newer class of reviews and magazines, as well as, more lately, the improved character of the newspaper press. Permeating, as it were, down through society, literature, in various inviting forms, had vivified and brought to the surface new orders of readers, and, besides, set a fashion for seeking recreation in books and periodicals, which was favorable to any cheapening of these engines of instruction and entertainment.

To causes of this nature are we chiefly to impute the Mechanics' Institution movement, and what was coeval with it, the rise of the Society for the Diffusion of Useful Knowledge, which was founded in 1825. Viewed as a distinct and imposing effort to stimulate the popular understanding, this association, with all the mistakes which marked its short career, is never to be spoken of without respect. As is well known, the Society was commenced under the auspices of several noblemen and gentlemen, who have for the greater part left their impress on the age—Lords Auckland and Althorp (afterwards

Earl Spencer), Lord John Russell, Lord Brougham, Sir James Mackintosh, Matthew D. Hill, Dr. Maltby, Mr. Hallam, and Captain Basil Hall, to which a long list of names could be added. The object of the Society was to issue a series of cheap treatises on the exact sciences, and on various branches of knowledge. In 1827, the year which saw the first of the Society's works, Archibald Constable, a man of bold conceptions, commenced the issue of his "Miscellany" of volumes of a popular kind; and others catching the contagion, for a time there was a perfect deluge of works, designed for the instruction and amusement of the multitude, and so moderate in price, that no one could now complain of being unable to fill his shelves at a small outlay. We also ought not to forget the service done to literature by such papers as the *Literary Gazette* and *Athenæum*, this last surviving as the representative of its class.

It is interesting to look back on those times, and note the progressive steps towards a thoroughly cheap yet original and wholesome literature. There was merit in the very shortcomings and failures, for, with their temporary or partial success, they showed that the public were not indisposed to support that in which they could have reason to place confidence. Some mistakes had been committed. The prints suppressed in 1820 had dealt principally in invective, of which no good can come. And those which were established afterwards, such as the *Mirror*, were purposeless in their aims.

The reign of William IV was the true era of the revival of cheap periodical literature. The political agitations of 1831, by stirring up the popular feelings, helped materially to stimulate the appetite for what would excite, instruct, and amuse. So far as the humbler orders were concerned, it almost appeared as if the art of printing, through certain mechanical appliances—particularly the paper-making machine and the printing-machine—was only now effectually discovered.

To meet the popular demand, a number of low-priced serials of a worthless or at least ephemeral kind were issued in London in 1831. At the same time, there were several set on foot in Edinburgh. The forerunner and best of these was styled the *Cornucopia*, which consisted of four pages, folio, and was sold for three half-pence. The editor and proprietor of this popular sheet was George Mudie, a clever but erratic being, who, I believe, had been a compositor. As the *Cornucopia* contained a quantity of amusing matter, and in point of size resembled a newspaper, it was deemed a marvel of cheapness; for at this time the ordinary price of a newspaper was fivepence. Eminently successful as a commercial undertaking, Mr. Mudie's sheet, if properly conducted, could not have failed to be permanently successful.

As a bookseller, I had occasion to deal in these cheap papers. One thing was greatly against them. They were frequently behind time on the day of publication; and any irregularity in the appearance of periodicals is generally fatal. It was also obvious that they

were conducted on no definite plan. They consisted for the most part of disjointed and unauthorized extracts from books, clippings from floating literature, old stories, and stale jocularities. With no purpose but to furnish temporary amusement, they were, as it appeared to me, the perversion of what, if rightly conducted, might become a powerful engine of social improvement. Pondering on this idea, I resolved to take advantage of the evidently growing taste for cheap literature, and lead it, as far as was in my power, in a proper direction.

It is, I think, due to myself and others to offer this explanation. I have never aspired to the reputation of being the originator of low-priced serials; but only, as far as I can judge, the first to make a determined attempt to impart such a character to these productions in our own day, as might tend to instruct and elevate independently of mere passing amusement. Professionally, I considered that the attempt was a noble and fair venture, one for which I might not be disqualified by previous literary experiences, humble as these had been. The enterprise promised to be at least in concord with my feelings.

Before taking any active step, I mentioned the matter to Robert. Let us, I said endeavor to give a reputable literary character to what is at present mostly mean or trivial, and of no permanent value; but he, thinking only of the not very creditable low-priced papers then current, did not entertain a favorable opinion of my projected undertaking. With all loyalty and affection, however, he promised to give me what literary assistance was in his power, and in this I was not disappointed. Consulting no one else, and in that highly wrought state of mind which overlooks all but the probability of success, I at length, in January 1832, issued the prospectus of *Chambers's Edinburgh Journal*, a weekly sheet at three half-pence. Announcing myself as editor, I stated that "no communications in verse or prose were wanted." In this, there was an air of self-confidence, not perhaps to be justified, but, as showing that my periodical was not to be composed of the contributions of anonymous and irresponsible correspondents, the effect was on the whole beneficial.

The first number appeared on Saturday, the 4th of February, 1832. It contained an opening address, written in a fervid state of feeling, as may be judged by the following passages:

"The principle by which I have been actuated, is to take advantage of the universal appetite for instruction which at present exists; to supply to that appetite food of the best kind, in such form and at such price as must suit the convenience of every man in the British dominions. Every Saturday, when the poorest laborer in the country draws his humble earnings, he shall have it in his power to purchase with an insignificant portion of even that humble sum, a meal of healthful, useful, and agreeable mental instruction. Whether I succeed in my wishes, a brief space of time will determine. I throw myself on the good sense of my countrymen for support; and all I

seek is a fair field wherein to exercise my industry in their service. It may perhaps be considered an invidious remark, when I state as my humble conviction, that the people of Great Britain and Ireland have never yet been properly cared for, in the way of presenting knowledge under its most cheering and captivating aspect, to their immediate observation. The scheme of diffusing knowledge has certainly been more than once attempted by associations established under peculiar advantages. Yet, the great end has not been gained. The dearth of the publications, official inflexibility, and above all, the plan of attaching the interests of political or ecclesiastical parties to the course of instruction or reading, have separately or conjunctly circumscribed the limits of the operation; so that the world, on the whole, is but little the wiser with all the attempts which have been made. The strongholds of ignorance, though not unassailed, remain to be carried. Carefully eschewing the errors into which these praiseworthy associations have fallen, I take a course altogether novel. Whatever may be my political principles, neither these nor any other which would be destructive of my present views, shall ever mingle in my observations on the arrangements of civil society." I concluded by notifying the species of subjects which would receive particular attention.

High as were my expectations, the success of the work exceeded them. In a few days there was, for Scotland, the unprecedented sale of fifty thousand copies; and at the third number, when copies were consigned to an agent in London for dispersal through England, the sale rose to eighty thousand, at which it long remained, with scarcely any advertising to give it publicity. To the best of my recollection, all the other cheap papers issued in Edinburgh immediately disappeared. In London, some also were dropped, but others sprung up in their stead. For a time, indeed, there was not a week which had not a new serial; but few of these candidates for public approval outlived the second or third number. So many began and never went farther, that a gentleman whom we happened to hear of possessed a large pile of first numbers of periodicals of which a second never appeared.

On the 31st of March, 1832, being about six weeks after the commencement of *Chambers's Journal*, appeared the first number of the *Penny Magazine* of the "Society for the Diffusion of Useful Knowledge." We learn from Mr. Charles Knight, its publisher, that the *Penny Magazine* was suggested to him on a morning in March, and that the Lord Chancellor (Brougham), who was waited on, cordially entered into the project, which was forthwith sanctioned by the Committee of the Society.* The *Penny Magazine* begun under such

* *Passages in a Working Life*, vol. ii. p. 180. This explanation disposes of a strange mistake which a writer has fallen into, doubtless from erroneous information, regarding *Chambers's Journal*. He speaks of my having seen a prospectus of the

distinguished auspices, and which, as is understood, had a very large circulation, terminated unexpectedly in 1845; though not without having exerted, during its comparatively brief career, an influence, along with similar publications, in stimulating the growth of that cheap and wholesome literature which has latterly assumed such huge proportions.

Why the *Penny Magazine*, with its alleged success as regards circulation, its large array of artists and writers, and its body of distinguished patrons, should have perished so prematurely, while there were still considerable strongholds of ignorance to be attacked, no one has ever ventured to explain. A silence equally mysterious hangs over the close of the Useful Knowledge Society, the proceedings of which were so vigorously heralded and sustained by articles in the *Edinburgh Review*, that no one could say the association failed for want of recommendation from the highest literary quarters. In the absence of any explanations on the subject, it may be conjectured that with all the ability displayed, and the best intentions of every one concerned, the treatise of the society were on the whole too technical and abstruse for the mass of operatives; they made no provision for the culture of the imaginative faculties; and, in point of fact, were purchased and read chiefly by persons considerably removed from the obligation of toiling with their hands for their daily bread. In a word, they may be supposed to have been distasteful to the popular fancy. If any other reason be wanted, it probably lay in the fact that a society can not, as a rule, compete with private enterprise.

It is not my duty to sit as critic on aims and efforts not unlike my own. There are different ways of doing things, and it may happen that one is as good as another. All that need be said is, that it has been a matter of congratulation, that *Chambers's Journal* owed nothing, in its inception or at any part of its career, to the special patronage or approval of any sect, party, or individual. In the whole proceedings of my brother and myself, we never courted the countenance or recommendation of any person or persons, or of any body of people, civil or religious; and after an experience of forty years, circumstances would point to the conclusion that this has not been the worst, besides being the least obsequious, line of policy.

Penny Magazine a long time before the periodical itself appeared; that I forwarded to the promoters certain suggestions calculated to improve the chances of its success; that no answer being vouchsafed, my self-love was wounded; and that I determined to realize my unappreciated ideas myself, in the form of *Chambers's Journal*. This is altogether incorrect. I did not hear of the *Penny Magazine*, nor could I, till shortly before its appearance, and after the *Journal* had been some weeks established.

THE CONDUCTING OF "CHAMBERS'S JOURNAL."

As in the case of a dissolving view, when, as if by magic, a bleak wintry scene is transformed into a landscape glowing with the warmth and verdant garniture of summer, so by the appearance of the *Journal*, and the wide popularity it secured, was there effected an agreeable and wholly unforseen change on my own condition, and that of others connected with me. The revolution was abrupt, and of a kind not to be treated with indifference. The moderate and not very conspicuous business in which I had been engaged was immediately relinquished, in consequence of the absorbing and prospectively advantageous literary enterprise in which I had embarked; and removing to a central part of the town, new and enlarged premises were acquired. Until the fourteenth number of the work, Robert was only in the position of contributor. Then abandoning his separate professional relations, he became joint editor, and was also associated with me in the firm of W. & R. Chambers.

Had *Chambers's Journal* been commenced in London, no mechanical difficulty would have been experienced. The case was very different in Edinburgh, where, at the time, there were obstructions as regards both paper and printing. John Johnstone, a genial old man, husband of the authoress of "Clan Albyn," and other novels, was a printer, and by him the work was for a time executed, as well as it could be in the circumstances. Other printers were afterwards employed, but their hand-presses, even with relays of men toiling night and day, proved altogether inadequate for the large impressions that were required. At length, a set of stereotype plates of each number was sent weekly to London, from which copies were printed for circulation in England; while from another set impressions were executed in Edinburgh by machines which we procured for the purpose. Steam settled the difficulty. The work was at first a sheet folio, subsequently the size was reduced to a quarto, and at last to an octavo form.

Entering on the comprehensive design of editing, printing, and publishing works of a popularly instructive and entertaining tendency, Robert and I were for a considerable length of time alone,—our immediately younger brother, James, having, to our distress, died in February, 1833, — and such was the degree of mutual confidence between us, that not for the space of twenty-one years was it thought expedient to execute any memorandum of agreement.

Though unusual, the combination of literary labor with the business of printing and publishing, is not without precedent. We may call to mind the examples set by Edward Cave, Samuel Richardson, and Robert Dodsley last century. We might, indeed, point to Sir Walter Scott in our own times; the only thing to be deplored in the case of that great man being that he kept his connection with the

printing establishment of the Ballantynes a profound secret, through an apprehension of losing caste among his law friends, instead of avowedly, like Richardson, becoming the printer, as well as holder of the copyrights, of his own productions.

A happy difference, yet some resemblance, in character, proved of service in the literary and commercial union of Robert and myself. Mentally, each had a little of the other, but with a wide divergence in matters requisite as a whole. One could not have well done without the other. With mutual help there was mutual strength. All previous hardships and experiences seemed to be but a training in strict adaptation for the course of life opened up to us in 1832. Nothing could have happened better—a circumstance which may perhaps go a little way towards inspiring hopes and consolations among those who may be destined to pass through a similar ordeal.

The permanent hold on the public mind which the *Journal* fortunately obtained, was undoubtedly owing, in a very great degree, to the leading articles, consisting of essays, moral, familiar, and humorous, from the pen of my brother. My own more special duties were confined for the most part to papers having in view some kind of popular instruction, particularly as regards the young, whom it was attempted to stimulate in the way of mental improvement. There likewise fell to my share the general administration of a concern which was ever increasing in dimensions. In conducting the *Journal*, the object never lost sight of was not merely to enlighten, by presenting information on matters of interest, and to harmlessly amuse, but to touch the heart, to purify the affections, thus, if possible, imparting to the work a character which would render it universally acceptable to families.

At no time was there any attempt to give pictorial illustrations of objects in natural history, the fine arts, or any thing else. Without undervaluing the attractions of wood-cut engravings, the aims of the editors were in a different direction. Their desire, it will be perceived, was to cultivate the feelings as much as the understanding. Hence the endeavor to revive, in a style befitting the age, the essay system of last century. In this effort, it may be allowable to say that Robert was eminently successful. His own explanations on the subject, embraced in the preface to a collection of his essays (published in 1847), are worthy of being quoted:

"It was in middle life that I was induced to become an essayist, for the benefit of a well-known periodical work established by my elder brother. During fifteen years I have labored in this field, alternately, gay, grave, sentimental, philosophical, until not much fewer than four hundred separate papers have proceeded from my pen. These papers were written under some difficulties, particularly those of a provincial situation, and a life too studious and recluse to afford much opportunity for the observation of social characteristics. Yet

perhaps these restraints have had some good effect on the other hand, in making the treatment of subjects less local and less liable to the accidents of fashion than it might otherwise have been. One ruling aim of the author must be taken into account: it was my design from the first to be the essayist of the middle class—that in which I was born and to which I continued to belong. I therefore do not treat their manners and habits as one looking *de haut en bas*, which is the usual style of essayists, but as one looking around among the firesides of my friends. For their use I shape and sharpen my apothegms; to their comprehension I modify any philosophical disquisitions on which I have entered. Every-where I have sought less to attain elegance or observe refinement than to avoid that last of literary sins—dullness. I have endeavored to be brief—direct; and I know I have been earnest. As to the sentiment and philosophy, I am not aware that any particular remark is called for. The only principles on which I have been guided are, as far as I am aware, these: whatever seems to be just, or true, or useful, or rational, or beautiful, I love and honor; wherever human woe can be lessened, or happiness increased, I would work to that end; wherever intelligence and virtue can be promoted, I would promote them. These dispositions will, I trust, be traced in my writings."

The year that saw the beginning of *Chambers's Journal* brought gloom over the literary world. After an unavailing search for health in the south of Europe, Sir Walter Scott returned to Abbotsford in the course of the summer, to die. The scene was gently closed on the 21st of September, 1832. The funeral of this illustrious Scotsman was appointed to take place on Wednesday the 26th. Among the very few mourners from Edinburgh who attended were my brother and myself. We saw the remains of the great man laid with appropriate solemnities in his grave amid the picturesque ruins of Dryburgh.

Indebted to Sir Walter for so many kindnesses some years previously, and in correspondence with him till the close of 1831, my brother felt that he had lost his most honored friend. Almost immediately he proceeded to write a memoir of the deceased from such materials as were within reach, as well as from personal recollections. The memoir was issued by us in a popular form and had an extraordinary sale, as many as eighty thousand copies.* It is referred to in the following letter from Allan Cunningham, with whom my brother had opened a correspondence. The letter is for other reasons interesting:

"27 LOWER BELGRAVE PLACE, 27th of *October*, 1832.

"MY DEAR SIR—Your letter was a welcome one. It is written with that frank openness of heart which I like, and contains a wish,

*This memoir has been revised and reissued, *Life of Sir Walter Scott*, by Robert Chambers, LL. D., with *Abbotsford Notanda*, by Robert Carruthers, LL. D. (1871).

which was no stranger to my own bosom, that we should be known to each other. You must not suppose that I have been influenced in my wish by the approbation with which I know your works have been received by your country. It is long since I took to judging in all matters for myself, and the 'Picture of Scotland' and the 'Traditions of Edinburgh,' both of which I bought, induced me to wish Robert Chambers among my friends. There was, perhaps, a touch or so of vanity in this—your *poetic*, *ballad-scrap*, *auld-world*, *new-world*, *Scottish* tastes and feelings seemed to go side for side with my own. Be so good, therefore, as to send me your promised 'Book of Ballads,' and accept in return, or rather in token of future *regard*, active and not passive, my 'Rustic Maid of Elvar,' who has made her way through reform pamphlets and other rubbish, like a lily rising through the clods of the spring. There 's a complimentary simile in favor of myself and my book! You must not, however, think ill of it because I praise it; but try and read it, and tell me what you feel about it.

"I have been much pleased with your account of Sir Walter Scott; it wears such an air of truth, that no one can refuse credence to it, and is full of interesting facts and just observations. I have no intention of expanding, or even of correcting, my own hasty and inaccurate sketch. Mr. Lockart will soon give a full and correct life of that wonderful man to the world. The weed which I have thrown on his grave—for I can not call it a flower—may wither as better things must do. Some nine thousand copies were sold; this we consider high, though nothing comparable, I know, to the immense sale of *Chambers's Journal.*' I am truly glad of your great circulation; your work is by a thousand degrees the best of all the latter progeny of the press. It is an original work, and while it continues so must keep the lead of the paste and scissors productions. My wife, who has just returned from Scotland, says that your *Journal* is very popular among her native hills of Galloway. The shepherds, who are scattered there at the rate of one to every four miles square, read it constantly, and they circulate it in this way: the first shepherd who gets it reads it, and at an understood hour places it under a stone on a certain hill-top; then shepherd the second in his own time finds it, reads it, and carries it to another hill, where it is found like Ossian's chief under its own gray stone by shepherd the third, and so it passes on its way, scattering information over the land.

"My songs, my dear sir, have all the faults you find with them, and some more. The truth is, I am unacquainted with any other nature save that of the Nith and the Solway, and I must make it do my turn. I am like a bird that gathers materials for its nest round its customary bush, and who sings in his own grove, and never thinks of moving elsewhere. The affectations of London are as nothing to me; in my 'Lives of the Painters,' I have, however, escaped from my valley, and on other contemplated works I hope to show that though I sing in

the charmed circle of Nithsdale, I can make excursions in prose out of it, and write and think like a man of the world and its ways.

"I remain, my dear sir, with much regard, yours always,

"ALLAN CUNNINGHAM.

"To ROBERT CHAMBERS, Esq."

It was gratifying for us, as editors of *Chambers's Journal,* to receive the approbation and good wishes of so prodigious a popular favorite as "Honest Allan," for, independently of the wide circulation of the work, his good word was an assurance that the principles on which it had been started and inflexibly maintained, were commendable. It will now seem strange to mention, that the success of this unassuming periodical led to species of persecution. On all hands we were beset with requests to give it the character of a "religious publication." It was in vain for us to state that that was not our *role;* that our work was addressed to persons of all shades of thinking, religious and secular, and that we could not, without violation of our original profession, take a side with any one in particular. We only got abused, and were called names. The era of this species of persecution, for such it was, however grotesque and ridiculous, extended for nearly twenty years after the commencement of the work; and we had often cause to be amused with the unreasonableness of the demands which were preferred, also to wonder if others in like circumstances were similarly assailed.

On one occasion we were impelled to address our readers, partly in explanation of the reasons for maintaining the principles on which the *Journal* was established. Some passages may be quoted as specifying the literary character of the work:

"With so many good results before us, it would surely be unwise were we to alter our plans in order to please the fancies of any sect, party, or individual. It is our firm conviction that any attempt to do so would be attended by failure. The many would be lost for the sake of the few who would be gained, and the work would soon dwindle into deserved insignificance. So much we say in all friendliness to those who seem inclined to fasten upon us functions for which we have no vocation. No, no; we must decline usurping the mission of the politician and the divine; we must leave the newspaper and the evangelical magazine to follow out their respective aims. To us, be it enough that we hold by the original charter of our constitution. *Chambers's Journal* shall never be written for this or that country, nor to meet this or that fashion of opinion, but to remain to the end what it has been from the beginning: a Literary Miscellany, aspiring to inculcate the highest order of morals, universal brotherhood, and charity; to present exalted views of Creative Wisdom and Providential Care; and to impart correct, or at all events, earnest and carefully formed, ideas on subjects of economic or general concern; endeavoring at the same time to raise no false expectations, to outrage

no individual opinion, and to keep out of sight every thing that would set mankind by the ears."

While resolutely holding to our appointed course, the establishment of rival publications less or more differing from our own in character, some of them religious, or colorably so, was so far from giving us uneasiness, that we ever hailed them as coadjutors, all laboring for the public good in their respective vocations; for it is only by such varied means that every department of the community can be reached. In April, 1834, Leigh Hunt set on foot the *London Journal*, which the editor, in his address, spoke of as being "similar in point of size and variety to *Chambers's Edinburgh Journal*, but with a character a little more southern and literary." Now that Mr. Hunt and my brother have both passed away, it is more than ever pleasing to peruse the correspondence that took place between them on the subject of this new claimant for popular favor. My brother wrote as follows:

"EDINBURGH, April 15, 1834.

"DEAR SIR,—I take leave to address you in this familiar manner for several reasons. The chief is your kind nature as exemplified in your writings, which prove you the friend of all mankind; the lesser are your allusions, on more occasions than one, to writings of mine when you did not perhaps know the exact name of the author. My purpose is to congratulate you on the first number of your *Journal*, which I have just seen, and to express my earnest and sincere hope that it will repay your exertions and render the latter part of your life more prosperous than you say the earlier has been. You will perhaps appreciate my good wishes the more that they proceed from an individual who, according to vulgar calculations, might expect to be injured by your success. I assure you, so far from entertaining any grudge towards your work on that score, I am as open to receive pleasurable impressions from it as I have ever been from your previous publications, or as the least literary of your readers can be, and as hopeful that it will succeed and prove a means of comfort to you as the most ancient and familiar of your friends. I know that your work can never do, by a tenth part, so much ill to my brother and myself as it may do good to you; for every book, however similar to others, finds in a great measure new channels for itself; and still more certain am I that the most jealous and unworthy feelings we could entertain would be ineffectual in protecting us from the consequences of your supplanting our humble sheets in the public favor. My brother and I feel much pleasure in observing that a writer so much our senior, and so much our superior, should have thought our plan to such an extent worthy of his adoption, and hope your doing so will only furnish additional proof of the justice of our calculations. This leads me to remark that, while I acknowledge the truth of your pretensions to having been the reviver of the periodical literature of a former age, and have looked to your manner of treating light sub-

jects as in part the model of our own, I must take this and every other proper opportunity of asserting my elder brother's merit as the originator of cheap respectable publications of the class of which your *Journal* is so important an edition. In the starting of *Chambers's Edinburgh Journal*, in February, 1832, he was unquestionably the first to develop this new power of the printing-press; and considering that we had some little character (at least in Scotland) to lose, and encountered feelings in our literary brethren little less apt, I may say, to deter us from our object than the terrors which assailed Rodolph in the Witch's Glen (a simile more expressive than it is apt), I humbly conceive that when the full utility of my brother's invention shall have been perceived by the world, as I trust it will in time, he will be fully entitled to have his claims allowed without dispute.

"That we have regretted to find ourselves the objects of so many of the meaner order of feelings among our brethren, it would be vain to deny. I must say, however, that we would have been ill to satisfy indeed if the admission of our weekly sheet into almost every family of the middle rank, and many of the lower throughout the country, had not more than compensated us for that affliction. Our labors, moreover, are profitable beyond our hopes, beyond our wants, besides yielding to us a ceaseless revenue of pleasure in the sense they convey to us of daily and hourly improving the hearts and understandings of a large portion of our species. That you may aim as heartily at this result, and be as successful in obtaining it, is the wish of, dear sir, your sincere friend and servant, ROBERT CHAMBERS.

"TO LEIGH HUNT, Esq."

There was a reply, lively and characteristic, a copy of which appeared in the fourth number of the *London Journal*, being introduced with some complimentary remarks:

"4 UPPER CHEYNE ROW, CHELSEA,
April 21, 1834.

"MY DEAR SIR,—I should have sooner acknowledged the receipt of your kind and flattering letter had I not, in the midst of a great press of business, been answering it in another manner through the medium of the *London Journal*, in the columns of which I have taken the liberty of putting it. I hope you will excuse this freedom, which I could not have taken with you had I respected you less; and I trust I have anticipated any delicacies you might have had on the point by stating to the reader that you had given me no intimation as to whether I might so use it or not. But setting aside other reasons for this step—injurious, I trust, to neither of us—it appeared to me too good a thing for the public to lose, as an evidence of the new and generous good-will springing up among reflecting people, and specially fit to be manifested by those who make it their business to encourage reflection. It would have been like secreting a sunbeam—

a new warmth—a new smile for the world. Nor will you think this image hyperbolical when you consider the effect which such evidence must have upon the world, however your modesty might incline you to depreciate it personally. Mankind, in ignorance of the sweet and bright drop of benevolence which they all more or less carry in their hearts ready to bathe and overflow it in good time, have been too much in the habit of returning mistrust for mistrust, and doubting every one else because each of themselves was doubted. Hence a world of heart-burnings, grudgings, jealousies, mischiefs, etc., till some even of the kindest people were ashamed to seem kind or to have better opinions of things than their neighbors. Think what a fine thing it is to help to break up this general ice betwixt men's hearts, and you will no longer have any doubt of the propriety of the step I have taken, even supposing you to have had any before, which I hope not. I forgot to say one thing in my public remarks on your letter, which was to express my hearty agreement with you as to the opinion that publications of this kind do no injury to one another. But this was implied in my address to the public in the first number, and I hope is self-evident. Most unaffectedly do I rejoice at hearing your own words confirm, and in so pleasant and touching a manner, the report of the great success of you and your brother in your speculation. I can not pretend, after all that I have suffered, not to be glad to include a prospect of my own success in it, however it may fall short of its extent. Any kind of a bit of nest of retreat, with powers to send forth my young comfortably into the world, and to keep up my note of cheerfulness and encouragement to all ears while I have a voice left, is all that I desire for myself, or ever did. But in consequence of what I *have* suffered, and conscientiously suffered too, I claim a right to be believed when I say that I could rejoice in the success of other well-wishers to their species, apart from my own, and have often done so; and in this spirit, as well as the other, I congratulate you. That you and your brother may live long to see golden harvests of all sorts spring up from the seed you have sown, and to reap in consequence that 'revenue of pleasure' you speak of, as well as the more ordinary one, is the cordial wish of, dear sir, yours faithfully, LEIGH HUNT.

"To ROBERT CHAMBERS, Esq."

No one could more regret than we did that Mr. Hunt's literary venture was not permanently successful. At the sixty-second number, he united with his journal a periodical called the *Printing Machine*, at the same time raising the price from three half-pence to twopence, and altering the day of publication. Changes of this kind are hazardous, if not usually injurious. From whatever cause, the publication, as far as can be remembered, did not reach its hundredth number, although, from the quality of its contents, it merited a much longer existence.

RETROSPECT OF GENERAL WORK DONE.

Looking back to 1833, memory brings up recollections of Robert living in the bosom of a young family, in a home noted for its genial hospitality, as well as for certain evening parties, in which were found the most enjoyable society and music; his wife seated at the harp or piano-forte, which he accompanied with his flute—the old flute which had long ago sounded along the Eddleston Water, and had been preserved through many vicissitudes; the entertainment being sometimes varied by the tasteful performances of worthy old George Thomson—Burns's Thomson—on the violin; my mother living with the junior members of the family in the composure and comfort which she had so meritoriously earned; and I settled in my newly-married life. Such was the position of affairs. All the surroundings agreeable.

The sad thing in these recollections is, that so many who composed our general society, and figured among the notables of the period, have passed from the stage of existence. A lady with whom we formed an intimacy, and who greatly enjoyed these evening parties, was Mrs. Maclehose, the celebrated "Clarinda" of Robert Burns. Now a widow in the decline of life, short in stature, and of a plain appearance, with the habit of taking snuff, which she had inherited from the fashions of the eighteenth century, one could hardly realize the fact of her being that charming Clarinda who had taken captive the heart of "Sylvander," and of whom he frenziedly wrote, on being obliged to leave her:

> "She, the fair sun of all her sex,
> Has blest my glorious day;
> And shall a glimmering planet fix
> My worship to its ray?"

Vastly altered since she was the object of this adoration, Clarinda still possessed a singular sprightliness in her conversation, and, what interested us, she was never tired speaking of Burns, whose unhappy fate she constantly deplored.

Another of our acquaintances, but seen only at times when he came to town, was James Hogg, the Ettrick Shepherd. I saw him first at my brother's house in 1831, and was amused with his blunt simplicity of character and good nature. It did not seem as if he had the slightest veneration for any one more than another whom he addressed, no matter what was their rank or position; and I could quite believe that he sometimes took the liberty, as is alleged of him, of familiarly addressing Sir Walter Scott as "Watty," and Lady Scott as "Charlotte." The Shepherd, however, was a genuinely good creature and agreeable acquaintance. On one occasion, he invited my brother and myself to what he called "a small evening party," at his inn in the Candlemaker Row, intimating, in an easy way, that we might

bring any of our friends with us. We went accordingly. Some time afterwards, when poor Hogg was no more, Robert gave an account, not in the least exaggerated, of this extraordinary entertainment, which may here be introduced as a specimen of the lighter class of articles in the early years of the *Journal.*

THE CANDLEMAKER ROW FESTIVAL.

"The late James Hogg was accustomed, in his later days, to leave his pastoral solitude in Selkirkshire once or twice every year, in order to pay a visit to Edinburgh. He would stay a week or a fortnight in the city, professedly lodging at Watson's Selkirk and Peebles' Inn in the Candlemaker Row, but in reality spending almost the whole of his time in dining, supping, and breakfasting with his friends; for, from his extreme good nature, and other agreeable qualities as a companion, not to speak of his distinction as a lion, his society was much courted. The friends whom he visited were of all kinds, from men high in standing at the bar to poor poets and slender clerks; and amongst all the Shepherd was the same plain, good-humored, unsophisticated man as he had been thirty years before, when tending his flocks among his native hills. In the morning, perhaps, he would breakfast with his old friend Sir Walter Scott, at his house in Castle street, taking with him some friend upon whom he wished to confer the advantage of an acquaintance with that great man. The forenoon would be spent in calls, and in lounging amongst the backshops of such booksellers as he knew. He would dine with some of the wits of *Blackwood's Magazine*, whom he would keep in a roar till ten o'clock; and then recollecting another engagement, off he would set to some fifth story in the Old Town, where a young tradesman of literary tastes had collected six or eight lads of his own sort, to enjoy the humors of the great genius of the 'Noctes Ambrosianæ.' In companies of this kind he was treated with such homage and kindness, that he usually got into the highest spirits, sang as many of his own songs as his companions chose to listen to, and told such droll stories that the poor fellows were like to go mad with happiness. After acting as the life and soul of the fraternity for a few hours, he would proceed to his inn, where it was odds but he would be entangled in some further orgies by a few of the inmates of the house.

"The only uneasiness which the poet felt in consequence of his being so much engaged in visiting, was that it rendered his residence at Watson's little better than a mere affair of lodging, so that, in his reckoning, the charge for his bed bore much the same proportion to that for every thing else which the sack bore to the bread in Falstaff's celebrated tavern bill. To remedy this, in some degree, the honest Shepherd was accustomed to signalize the last night of his abode in the inn by collecting a vast crowd of his Edinburgh friends, of all

ranks and ages and coats, to form a supper party for the benefit of the house. In the course of the forenoon, he would make a round of calls, and mention, in the most incidental possible way, that two or three of his acquaintances were to meet that night in the Candlemaker Row at nine, and that the addition of this particular friend whom he was addressing, together with any of *his* friends he chose to bring along with him, would by no means be objected to. It may readily be imagined that, if he gave this hint to some ten or twelve individuals, the total number of his visitors would not probably be few. In reality, it used to bring something like a Highland host upon him. Each of the men he had spoken to came, like a chief, with a long train of friends, most of them unknown to the hero of the evening, but all of them eager to spend a night with the Ettrick Shepherd. He himself stood up at the corner of one of Watson's largest bedrooms to receive the company as it poured in. Each man as he brought in his train would endeavor to introduce each to him separately, but would be cut short by the lion with his bluff, good-humored declaration, 'Ou ay, we'll be a' weel acquent by and by.'

"The first two clans would perhaps find chairs, the next would get the bed to sit upon; all after that had to stand. This room, being speedily filled, those who came subsequently would be shown into another bedroom. When it was filled too, another would be thrown open, and still the cry was, 'They come!' At length, about ten o'clock, when nearly the whole house seemed 'panged' with people, as he would have himself expressed it, supper would be announced. Then such a rushing and thronging through the passages upstairs and downstairs, such a tramping, such a crushing, and such a laughing and roaring withal—for, in the very anticipation of such a supper, there was more fun than is experienced at twenty ordinary assemblages of the same kind. All the warning Mr. Watson had got from Mr. Hogg about this affair was a hint, in passing out that morning, that *twae-three* lads had been speaking of supping there that night. Watson, however, knew of old what was meant by *twae-three*, and had laid out his largest room with a double range of tables, sufficient to accommodate some sixty or seventy people. Certain preliminaries have in the mean time been settled in the principal bed-room. Mr. Taylor, commissioner of police for the ward which contains the Candlemaker Row, is to take the chair—for a commissioner of police in his own ward is greater than the most eminent literary or professional person present who has no office connected with the locality. Mr. Thomson, bailie of Easter Portsburgh, and Mr. Gray, moderator of the Society of High Constables, as the next most important local officials present, are to be croupiers. Mr. Hogg is to support Mr. Taylor on the right, and a young member of the bar is to support him on the left.

"In then gushes the company, bearing the bard of Kilmeny along like a leaf on the tide. The great men of the night take their seats

as arranged, while others seat themselves as they can. Ten minutes are spent in pushing and pressing, and there is after all a cluster of Seatless, who look very stupid and nonplused till all is put to rights by the rigging out of a table along the side of the room. At length all is arranged; and then, what a strangely miscellaneous company is found to have been gathered together! Meal-dealers are there from the Grassmarket, genteel and slender young men from the Parliament House, printers from the Cowgate, and booksellers from the New Town. Between a couple of young advocates sits a decent grocer from Bristo street; and amid a host of shop-lads from the Luckenbooths is perched a stiffish young probationer, who scarcely knows whether he should be here or not, and has much dread that the company will sit late. Jolly, honest like bakers, in pepper-and-salt coats, give great uneasiness to squads of black coats in juxtaposition with them; and several dainty-looking youths, in white neck-cloths and black silk eye-glass ribbons, are evidently much discomposed by a rough tyke of a horse-dealer who has got in among them, and keeps calling out all kinds of coarse jokes to a crony about thirteen men off on the same side of the table. Many of Mr. Hogg's Selkirkshire store-farming friends are there, with their well-oxygenated complexions and Dandie-Dinmont-like bulk of figure; and in addition to all comers, Mr. Watson himself, and nearly the whole of the people residing in his house at the time. If a representative assembly had been made up from all classes of the community, it could not have been more miscellaneous than this company, assembled by a man to whom, in the simplicity of his heart, all company seemed alike acceptable.

"When supper was finished, the chairman proceeded to the performance of his arduous duties. After the approved fashion in municipal convivialities, he gave the King, the Royal Family, the Duke of York and the Army, the Duke of Clarence and the Navy, and all the other *loyal and patriotic toasts*, before he judged it fit to introduce *the toast of the evening*. He then rose and called for a real, a genuine bumper. 'Gentlemen,' said he, 'we are assembled here this evening in honor of one who has distinguished himself in the poetical line; and it is now my pleasing duty to propose his health. Gentlemen, I could have wished to escape this duty, as I feel myself altogether incapable of doing justice to it; it is my only support in the trying circumstances in which I have been placed, that little can be required to recommend the toast to you. (Cheers.) Mr. Hogg is an old acquaintance of mine, and I have read his works. He has had the merit of raising himself from a humble station to a high place among the literary men of his country. You have all felt his powers as a poet in his "Queen's Wake." When I look around me, gentlemen, at the respectable company here assembled—when I see so many met to do honor to one who was once but a shepherd on a lonely hill—I can not but feel, gentlemen, that much has been done by Mr.

Hogg, and that it is something fine to be a poet. (Great applause.) Gentlemen, the name of Hogg has gone over the length and breadth of the land, and wherever it is known, it is held as one of those which do our country honor. It is associated with the names of Burns and Scott, and, like theirs, it will never die. Proud I am to see such a man among us, and long may he survive to reap his fame, and to gratify the world with new effusions of his genius! Gentlemen, the health of Mr. Hogg, with all the honors.' The toast was accordingly drunk with great enthusiasm, amid which the Shepherd rose to make his usual acknowledgment: 'Gentlemen, I was ever proud to be called a poet, but I never was so proud as I am this nicht,' etc.

"This part of the business over, the chairman and croupiers began to do honor to civic matters. The chairman gave the Magistrates of Edinburgh, to which Mr. Thomson, one of the croupiers, felt himself bound to return thanks. Mr. Thomson then gave the Commissioners of Police, which brought the chairman upon his legs. 'Messrs. Croupiers and Gentlemen,' said he, 'I rise, as an humble member of the body just named, to thank you, in the name of that body, and my own, for this unexpected honor. I believe I may say for this body, that they do the utmost in their power to merit the confidence of their constituents, and that, if they ever fail in any thing to give satisfaction, it is not for want of a desire to succeed. But let arithmetic speak for us. You all know that the police affairs of the city were formerly administered at an expense to you of no less than one-and-sixpence a pound on the valued rental. And you all know what a system it was, how negligent, inefficient, and tyrannical. Now, gentlemen, our popularly elected commission has been seven years in existence, during all which time we have watched, and lighted, and cleaned you at thirteen pence half-penny!' (Great and prolonged cheering.)

"There is now for two hours no more of Hogg. The commissioners, bailies, and moderators, have the ball at their foot, and not another man can get in a word. Every imaginable public body in the city, from the University to the Potterrow Friendly Society, is toasted, most of them with the honors. Then they come to individuals. A croupier proposes the chairman, and the chairman proposes the croupiers. One of the latter gentlemen has a gentlemen in his eye, to whom the public has been much indebted, and whose presence is always acceptable, and after a long preamble of panegyric, out comes the name, the honored name of Mr. John Jaap, ex-resident commissioner of police for the next ward. It is all in vain for Mr. Hogg's literary or professional friends to raise their voices amidst such a host of bourgeoisie. The spirit of the Candlemaker Row and Bristo street rules the hour, and all else must give way, as small minorities ought to do. Amidst the storm of civic toasts, a little thickish man, in a faded velvet waistcoat and strong-

ale nose, rises with great solemnity, and addressing the chair, begs leave to remind the company of a very remarkable omission which has been made. 'Gentlemen,' said he, 'I am sure, when I mention my toast, you will all feel how much we have been to blame in delaying it so long. It is a toast, gentlemen, which calls in a peculiar manner for the sympathies of us all. It is a toast, gentlemen, which I am sure needs no recommendation from me, but which only requires to be mentioned in order to call up all that feeling which such a toast ever ought to call up—a toast, gentlemen, a toast such as seldom occurs. Some perhaps, are not aware of an incident of a very interesting nature which has taken place in the family of one of our worthy croupiers this morning. It has not yet been announced in the papers, but it probably will be so to-morrow. In the mean time I need only say "Mrs. Gray, of a daughter." (Cheering from all parts of the house.) On such an occasion, gentlemen, you will not think me unreasonable if I ask you to get up, and drink, with all the honors, a bumper to Mrs. Gray and her sweet and interesting charge.' (Drunk with wild joy by all present.)

"About two o'clock in the morning, after the second reckoning has been called and paid by general contribution, Mr. Taylor leaves the chair, which is taken by the young advocate. Other citizenly men, including the croupiers, soon after glide off, not liking to stay out late from their families. As the company diminishes in number, it increases in mirth, and at last the extremities of the table are abandoned, and the thinned host gathers in one cluster of intense fun and good-fellowism around the chair. Hogg now shines out for the first time in all his luster, tells stories, sings, and makes all life and glee. The 'Laird of Lamington,' the 'Women Folk,' and 'Paddy O'Rafferty,' his three most comic ditties, are given with a force and fire that carries all before it. About this time, however, the reporters withdraw, so that it is not in our power to state any further particulars of the Candlemaker Row Festival.

. . . . . .

"The Shepherd now reposes beneath the sod of his native Ettrick, all the sorrows and joys of his checkered career hushed with his own breath, and not a stone to point pale Scotia's way, to pour her sorrows o'er her poet's dust. While thus recalling, for the amusement of an idle hour, some of the whimsical scenes in which we have met James Hogg, let it not be supposed that we think of him only with a regard to the homely manners, the social good-nature, and the unimportant foibles, by which he was characterized. The world amidst which he moved was but too apt, especially of late years, to regard him in these lights alone, forgetting that beneath his rustic plaid there beat one of the kindest and most unperverted of hearts, while his bonnet covered the head from which had sprung 'Kilmeny' and 'Donald Macdonald.' Hogg, as an untutored man, was a prodigy, much more so than Burns, who had had comparatively a good edu-

cation; and now that he is dead and gone, we look around in vain for a living hand capable of awakening the national lyre. The time will probably come when this inspired rustic will be more justly appreciated."

One thing leads to another. The continued success of the *Journal* brought on, as if by a natural sequence, fresh enterprises, to which, with some assistance, we could give proper attention. In 1833 we projected and issued the work styled "Chambers's Information for the People." It consisted of a series of sheets, on subjects in which distinct information is of importance among the people generally; such as the more interesting branches of science, physical, mathematical, and moral; natural history, political history, geography and literature; together with papers on fireside amusements and miscellaneous topics considered to be of popular interest. As latterly improved, the work is comprehended in two octavo volumes, illustrated with wood-engravings. First and last, its sale has amounted to upwards of a hundred and seventy thousand sets, very nearly two millions of sheets. How far the diffusion of this enormous quantity of popularized knowledge at a small price may have proved beneficial, it is not for us to say. The work was reprinted in the United States, but with what success we never heard. With some changes of subject, a translation appeared in Paris under the title of "Instruction pour le Peuple." There was also a translation of a portion of the work into Welsh, by Ebenezer Thomas, or Eben the Bard, a person of no mean celebrity in Wales.

Next, in 1835, was announced and begun a literary undertaking very much more onerous and elaborate. This was Chambers's Educational Course," consisting of a series of treatises and school-books, constructed according to the most advanced views of education, both as a science and an art. In the series of books which followed was comprehended a section on physical science, the first time, as far as we were aware, of any thing of the kind having been attempted in a form addressed to common understandings. Of the series of books my brother wrote several, including "History of the British Empire," and "History of the English Language and Literature," this being the first time that any thing of the kind had been attempted as a class-book.

To acquire some knowledge of the state of education, and the nature of the treatises employed, in the kingdom of the Netherlands, I made a deliberate journey through that country in 1838, visiting the schools in the principal towns, every-where seeing with much pleasure the satisfactory manner in which the "religious difficulty," as it is called, had been overcome. What fell under notice was described in a "Tour in Holland and the Rhine Countries" (1839), and it vindicated the plan which had been adopted in constructing our "Educational Course" free of matter that could lead to controversy. No more need be said of the "Course" than that it met with a

friendly reception at home and in the colonies, and that this acceptability is still increasing.

Writing to his old friend Wilson at Poughkeepsie, in 1835, my brother says: "I am continuing to pursue that course of regular plodding industry which you have witnessed since its commencement. Personally, I have now hardly any thing to do with business, but I participate with my elder brother in the great advantage of uniting the duties of a publisher with those of an author. Of the *Journal*, about sixty thousand are now sold; and in England the circulation is steadily rising. That work seems now indeed received and sanctioned as a powerful moral engine for the regeneration of the middle and lower orders of society. We have just commenced the publication of a series of educational works, designed to embrace education—physical, moral, and intellectual—according to the most advanced views. To all appearance, this will also be a successful undertaking. While my brother has been married two years without any surviving children, I have now no fewer than four. . . . We all enjoy good health; and I often think I realize in my domestic circle that happiness which authors have endeavored to represent as visionary. Men, it is allowed, are apt to speak of things as they find them; and, for my part, I would say that it is possible to lead the life of a literary man without any of those grievances and evil passions which others picture as inseparable from the profession. I envy none, despise none, but, on the contrary, yield due respect to all, whether above or beneath me. I am but little disposed to pine for higher honors than I possess; they come steadily, and I am content to wait till they come. The result is, that hardly such a thing as an annoyance ever breaks the calm tenor of my life, and that there is not one person with whom I was ever acquainted whom I can not meet as a friend."

From 1835 to 1837, as is seen by my brother's papers, he was in pretty frequent communication with Hugh Miller on literary subjects. Settled at Cromarty as an assistant in a bank, Miller had some spare time on his hands, which he wished to devote to writing stories and other articles for *Chambers's Journal*, the reading of that periodical having apparently been to him a means of mental stimulus. Limits, unfortunately, do not admit of the insertion of Miller's letters in full. In one, dated 19th of March 1835, he refers to the difficulties he had encountered in acquiring a facility in writing for the press:

"Oblige me by accepting the accompanying volume. It contains, as you will find, a good many heavy pieces, and abounds in all the faults incident to juvenile productions, and to those of the imperfectly taught; but you may here and there meet with something to amuse you. I have heard of an immensely rich trader who used to say he had more trouble in making his first thousand pounds than in making all the rest. I have experienced something similar to this

in my attempts to acquire the art of the writer; but I have not yet succeeded in making my first thousand. My forthcoming volume, which I trust I shall be able to send you in a few weeks, will, I hope, better deserve your perusal. And yet I am aware it has its heavy pieces too—dangerous looking sloughs of dissertation in which I well-nigh lost myself, and in which I had no small risk of losing my readers. One who sits down to write for the public at a distance of two hundred miles from the capital has to labor under sad disadvantages in his attempts to catch the tone which chances to be popular at the time; more especially if, instead of having formed his literary tastes in that tract of study which all the educated classes have to pass through, he has had to pick them up by himself in nooks and by-corners where scarcely any one ever picked them up before. Among educated men the starting-note, if I may so express myself, is nearly the same all the world over, and what wonder if the after-tones should harmonize; but, alas! for his share of the concert who has to strike up on a key of his own. . . . All my young friends here, and I have a great many, are highly delighted with your volume of Ballads."

Some years later, Mr. Miller made distinct overtures to be a contributor. Under date 14th of September, 1837, he writes:

"I have been a reader of your *Journal* for the last five years, a pleased and interested reader; and a few days ago the thought struck me that, so far at least as one contributor goes, I might also be a writer for it. . . . I have been writing a good deal of late—mostly stories; but the vehicle in which I have given them to the public [a collection of tales] does not quite satisfy me. Some of my brother-contributors are rather more stupid than is agreeable in one's associates; and besides there is less pleasure in writing sense in the name of another than in one's own. Every herring should hang by its own head. May I ask you, without presuming too far on your good nature and the kindness you have already shown me, to read one or two of my stories, and say at your convenience whether I might not find some way of disposing of such to better advantage. . . . I send you also a copy of verses which I addressed about two years ago to a lady, who has since become my wife. I do not know that they have much else besides their sincerity to recommend them, but sincerity they have. It is, I believe, Cowper who tells us that 'the poet's lyre should be the poet's heart.'"

The articles sent were duly acknowledged and inserted. Others followed in 1838, chiefly of familiar papers on geology. It is one of the things to look back upon with gratification, that Hugh Miller had been, not only an early reader of, but a contributor of interesting papers to, *Chambers's Journal.*

Shortly after this period, considerable additions were made to our establishment, to meet the requirements of an ever-growing business. It is not the purpose, however, of the present Memoir to diverge into any account of the various enterprises in which we happened to engage. Only two may be mentioned as peculiarly furthering the distribution of a cheap, and, as it was hoped, useful species of publications among the less affluent classes in the community. One of these undertakings was "Chambers's Miscellany of Useful and Entertaining Tracts," a work completed in twenty volumes, adapted for parish, school, regimental, prison and similar libraries. The circulation was immense; and to keep the work abreast of the age, it has recently undergone considerable revision.

The other of these enterprises was one which exceeded all former efforts. This was "Chambers's Encyclopædia, a Dictionary of Universal Knowledge for the People," a work begun in 1859, and which continued to be issued till its completion, in ten volumes, in 1868. Unless with the assistance of a large and varied body of contributors, a book of this comprehensive nature could not have been attempted. This assistance was procured, and what was of greater importance, Dr. Andrew Findlater entered with much spirit into our views, and brought his erudition and habits of assiduous literary labor into exercise as acting editor. For all parties, however, the task was herculean. In commencing the work, my brother and I felt excusable in describing it as our "crowning effort in cheap and instructive literature."

When we entered on the undertaking, it was considerably more than a hundred years since Ephraim Chambers gave to the world his "Cyclopædia, or Universal Dictionary of Knowledge," the prototype, as it proved to be, of a number of similar works in Britain as well as in other countries, which must have contributed in no small measure to increase the sum of general intelligence. In nearly all these works there was a tendency to depart from the plan of their celebrated original, as concerns some of the great departments of science, literature, and history; these being usually presented, not under a variety of specific heads, as they commonly occur to our minds when information is required, but aggregated in large and formal treatises, such as in themselves form books of considerable bulk. By such a course, it is manifest that the serviceableness of an encyclopædia as a dictionary of reference is greatly impaired, whatever be the advantages which on other points are gained. The Germans, in their "Conversations Lexicon," were the first to bring back the encyclopædia to its original purpose of a dictionary. The *Penny Cyclopædia* was another effort in the same direction, but it was extended to such dimensions as to put it out of the reach of the very classes for whom it was designed. Our object was to give a comprehensive yet handy and cheap Dictionary of Universal Knowledge, no subject being treated at greater length than was absolutely necessary. As now completed, it will be for the world to judge whether the work realizes the object aimed at.

It would have been impossible to give concentrated attention to the various works mentioned, as well as to those of which Robert was exclusively the author or editor, without a proper organization in one large establishment. As regards *Chambers's Journal*, we were fortunate in having a succession of able and zealous literary assistants; among others, Mr. T. Smibert (deceased), Mr. W. H. Wills, Mr. Leitch Ritchie (deceased), and Mr. James Payn—to whom be every acknowledgment.

So aided, and with twelve printing machines set to work, there was at length a fair average produce of fifty thousand sheets of one kind or other daily. Under one roof were combined the operations of editors, compositors, stereotypers, wood-engravers, printers, bookbinders, and other laborers, all engaged in the preparation and dispersal of books and periodicals. The assemblage of so many individuals in various departments, actuated by a common purpose, suggested the idea of annual entertainments to all in our employment. The first of these entertainments, which had for its express object the promotion of a good feeling between employers and employed, took place in the summer of 1838. The meeting was in the form of a temperance *soirée*, with some slight refreshments and music. It was held in one of the large apartments of our printing-office; and to grace the assemblage, some persons of local distinction were invited. Among the notabilities who attended on the occasion were Lords Murray and Cunningham; also Mr. James Simpson, a keen educationist, but best remembered for his amusing account of a visit to the field of Waterloo, shortly after the battle. Usually at these *soirées* there were about two hundred of all classes, and of both sexes, present, all in evening dress, and joyous for the occasion. In the intervals of the instrumental music, addresses were delivered, and songs were sung; on one occasion, as I have pleasure in remembering, George Thomson delighted the company with the song of the "Posie," the warbling of which sent the mind back to 1792, when our national bard was pouring forth his matchless lyrics. The addresses on both sides were of that friendly nature which was calculated to promote a spirit of mutual amity not to be forgotten.

The presence of my mother was a pleasing feature at the earlier of these annual *soirées*. Now at an advanced age, but retaining her buoyancy of feelings, she entered sympathizingly into the spirit of the occasion. Grateful for many unexpected blessings, her existence drew placidly to a close. She died in 1843, having exemplified in her life the brightest virtues that can adorn the matronly character.

ROBERT'S LATER WORKS—1842 TO 1865.

There is no pleasing every body. My brother's connection with *Chambers's Journal* gave no small dissatisfaction to a writer who affected to mourn over his desertion of what at one time promised to

confer "distinction in the historical and antiquarian departments of literature." So much (and a good deal more) was querulously said of him in a leading critical organ in 1842. The accomplished reviewer who, in a spirit of patronizing sorrow, fell into this disconsolate frame of mind, had wholly failed to remember that the most precious writings of Steele and Addison made their appearance in penny papers; that the classic essays of Johnson were issued originally in the same form; and that the immortal fiction of Defoe first appeared chapter by chapter in the columns of a London newspaper. Forgetting all that, and possessing no sympathy with the cause of popular enlightenment, the lofty-minded reviewer perceived only a lamentable loss of caste for all who attempted to give their ideas to the world at any thing under the quality of a handsome twelve-shilling octavo, fit for the "English library."

The critic was a little rash in his speculations. So far from devoting himself exclusively to the cheap periodical which roused so much temper, Robert continued to employ a large portion of his time on separate works, which raised him considerably in the estimation of the literary world. Abstaining from interference in public affairs, for which he never had any aptitude, his life was now, as it had been for many years, that of a literary recluse, who indulges in but a limited amount of recreation. His papers for *Chambers's Journal* occupied him for only one or two days a week. At the very time he was so unceremoniously called in question, he had completed, in conjunction with Professor Wilson, a most elaborate work on the "Land of Burns," which, extending to two highly embellished quarto volumes, is understood to have rewarded the enterprise of the publishers by whom it had been undertaken.

The success of this small educational book on English literature led to the conception of a work vastly more comprehensive. He projected a "Cyclopædia of English Literature" that should form a history, critical and biographical, of British authors, from the earliest to the present times, accompanied with a systematized series of extracts—a concentration of the best productions of English intellect, headed by Chaucer, Shakespeare, Milton; by Moore, Bacon, Locke; by Hooker, Taylor, Barrow; by Addison, Johnson, Goldsmith; by Hume, Robertson, Gibbon; and more lately by Byron and Scott—*set* in a biographical and critical history of the literature itself. This was certainly no mean enterprise. The end which, if possible, was to be attained, was the training of an entire people to venerate the thoughtful and eloquent of the past and present times. "These gifted beings," it was justly observed, "may be said to have endeared our language and institutions—our national character, and the very scenery and artificial objects which mark our soil—to all who are acquainted with, and can appreciate their writings."

It being impossible, with all his self-sacrificing diligence, to execute so onerous a task single-handed, my brother besought and re-

ceived the aid of his friend Dr. Robert Carruthers of Inverness, who, both by his literary tastes and professional pursuits, was eminently qualified to co-operate in the undertaking. Completed in two volumes octavo, and issued in 1844, the "Cyclopædia of English Literature" had a most successful career, and continues to be popular, not only for private reading, but as a book for the higher class of students.

In 1847 were issued his "Select Writings," in seven volumes, for which several characteristic illustrations were furnished by David Roberts, R. A. A copy having been presented by the author to his friend, D. M. Moir—the "Delta" of *Blackwood*—it was acknowledged as follows:

"Allow me to congratulate you on the publication of your 'Select Writings,'—a thing which you owe to yourself and your family, and of which both will have reason to be proud. . . . In these days of flash and fury, when a certain class of writers seem to think that a work is valuable only as far as it departs from the regions of good taste and common sense, the essays will stand forth as a beacon to the unwary, and as a token that some minds have escaped the infection. Nor can I doubt that they will attain a large degree of popularity, which they deserve. In last night glancing through the volumes I have made myself more intimate with many old acquaintances, highly characteristic of Scotland and the author, and equally creditable to our 'auld respectit mother,' and to her son."

It will probably be allowed that the essays comprehended in three volumes of these "Select Writings," were the greatest of my brother's productions. In them were seen his depth of thought on moral and economic subjects, also his sense of humor, with power of discriminating character. Old readers of *Chambers's Journal* will remember the recurring weekly pleasure of reading these essays: "General Invitations," "The Pleasures of Unhappiness," "The House of Numbers," "The Unconfined," "Danger of Appearing Ill-used," "The Downdraught," etc. In a preceding chapter, a specimen of the more humorous class of papers is given in "Candlemaker Row Festival." Perhaps in the whole round of his four to five hundred leading articles, none was more appreciated for the delicacy of its conceptions than one which is now brought back to light.

IDEA OF AN ENGLISH GIRL.

"'Girl' is a word of delightful sense. It suggests ideas of lightness, elegance, and grace, joined to simplicity, innocence, and truth, all embodied in that class of human beings which make the nearest approach to the angelic. The very sound of the word is appropriate; it comes upon the ear and the heart like a flourish of fairy trumpets. The letters which compose it seem to be all dancing as they trip along. There is no slur or drag in this exquisite syllable; it is a kind

of perpetual motion. How far the same ideas may be suggested by the corresponding words in other languages I will not stop to inquire; it is enough for me that *our* word is suitable to the character of *our* girls—English girls, I mean—for the word has nothing to do with Scotland, where 'lassie' has its own delicious sense and admirable appropriateness. The English 'girl' is the being whom the word was meant to describe, and no being or thing could have a designation more descriptive.

"Neck of lily, cheeks of rose, and eyes of heaven. Hair of sunny auburn, whose tiny tendrils dance with the slightest motion. A face nearer round than oval, but irradiated by the unsetting sun of a kind nature. A figure meek and graceful, wreathed in innocent muslin, and perpetually undulating and bending into lines of beauty. Such is the fair Saxon girl of Old England, as she grows in some sheltered nook of the merry land, unsmirched by the smoke and sophistications of cities, and little knowing of any other world than the little one which forms her home. It is the fortune of few eyes to behold this fair girl, for her parents prefer a life of retirement; but to the few who have once seen her, she is as the recollection of the Caaba is to the Mohammedan pilgrim, an idea to be cherished forever. She chiefly holds intercourse with nature; with the more beautiful parts of it; for there is a sympathy in lovely things that makes them love one another. She dotes upon flowers — fair roses, sisters to herself and rhododendrons that strive to match her in stature; nor is there even a little violet in the garden but every day exchanges with her kind looks, as if the dewdrop lurking in it were a mirror to her own smiling loveliness, diminishing the object, but not leaving a lineament unexpressed. Out of these troops of floral friends she is ever and anon choosing some one more endeared than the rest, to wear for awhile in her bosom; a preference which might make those which remained die sooner than that which was cropped. Her favorite seat is under a laburnum, which seems to be showering a new birth of beauty upon her head. There she sits in the quiet of nature, thinking thoughts as beautiful as flowers, with feelings as gentle as the gales which fan them. She *knows* no evil, and therefore she *does* none. Untouched by earthly experiences, she is perfectly happy; and the happy are good.

"Affection remains in her as a treasure, hereafter to be brought into full use. As yet she only spends a small share of the interest of her heart's wealth upon the objects around her; the principal will on some future and timely day be given to one worthy, I hope, to possess a thing so valuable. Meanwhile, she loves as a daughter and a sister may do. Every morning and evening she comes to her parents with her pure and unharming kiss; nor, when some cheerful brother returns from college or from counting-house to enliven home for a brief space, is the same salutation wanting to assure him of the continuance of her most sweet regards. Often, too, she is found in-

tertwining her loveliness with that of her sisters—arm clasping waist, and neck crossing neck, and bosom pressed to bosom, till all seems one inextricable knot of beauty. No jealousy, no guile, no envy, no more than what possesses a bunch of lilies growing from the same stem. She has some spare fondness, moreover, for a variety of pets in the lower orders of creation. There are chickens which will leave the richest morsels at the sound of her voice, and little dogs which will give up yelping, even at the most provoking antagonists, if she only desires them. Her chief favorite, however, is a lamb, which follows her wherever she goes, a heaven-sent emblem of herself. To see her fondling this spotless creature on the green, innocence reposing upon innocence, you might suppose the golden age had returned, and that there was to be no more wickedness seen on earth.

"Our 'English girl' may be seen in various places. You meet her on a walk, and are charmed with her fresh complexion and blue modest eyes, as half seen under the averted bonnet. Then there are neat shoes and white stockings, so pretty as compared with the hard outline of the booted foot, in which the ladies of other countries delight. There are also her gauzy frock, and its streaming sashes and ribbons, and her hair depending in massy ringlets adown her lovely neck. The whole figure breathes of the free and pure mind which animates it. At another time she is found in some pretty withdrawing room, whose casements open upon flowery walks or green verandas. Her head is now invested only with the grace of nature—her flowing hair. Her countenance, instead of being flushed, as in the other case, by the open air, beams from the gentle toil of some domestic duty in which she has been assisting her mother.

"Appropriate to her late task, she still wears her neat apron, edged with blue trimming, and from the front of which perk out two smart, provoking-looking pockets, which gush over with all kinds of female paraphernalia, such as scissors, cotton-balls, and knitting-wires. You enter, and, being a friend of the family, she is *so* glad to see you. In five minutes you know all about the accomplishments of her canaries, the late behavior of Bob, the spaniel, an accident which happened that morning to her best frock, and the *annual* which she has received as a present—'from a friend,' as the inscription has it—and here she evidently wishes you rather to look into the inside of the book than dwell on the initial pages. She has also a few of the nothings called 'ladies work,' light, visionary fabrics of card and wafers, which she has been executing for a charity sale that is soon to take place; these are all brought out and displayed before you. Then there is her album, with holograph poems, by three authors of reputation, and a thousand contributions, both original and selected, from less distinguished persons, the whole being garnished by her own drawings. All these things you must inspect, for she only shows them in the hope of entertaining you; and then she turns to music.

"She has had selections from the last opera sent to her, and these she runs over, for your amusement, on the piano-forte; carefully taking you bound, however, to observe that she has not yet sufficiently practiced them to be quite perfect in their execution. In truth you little need such apologies for her deficiencies. It is not for her external accomplishments — though these are considerable—that you value this fair specimen of humanity. You appreciate her for her beauty—which nature could never have conferred if it had not been intended as a reverence-compelling merit for her gentle and artless nature, so well enshrined in that form of native and indefeasible grace — and because, by dwelling on the contemplation of such a being, your estimation of your kind is elevated; a gratification in itself, and one of the highest order.

"Such is the 'English girl,' as she still exists in many of the happy homes throughout this pleasant land. She is one of the creations of nature, which, though decaying in generations, live nevertheless forever as a race. It would be as absurd to expect that the next spring should fail to prank the sod of England with primroses, as to suppose that there will ever be a time with us when the cheeks of girls shall not bloom, and their hearts cease to be stored with those blessed influences which tend so much to cheer the rest of their kind. We may be ruined twice over—in the newspapers—but there will never be a time when the lover of nature shall want objects to solace himself withal. For him shall the ground, year after year, be covered with a new robe of green, the trees redress their disheveled locks, the flowers once more put on their bloom; and for him there shall never be wanting sweet faces decked with maiden smiles, and painted with perennial roses, to assure him that England is still right at the heart.'"

It might also be conjectured that my brother's "Idea of an English girl" had been partly suggested by the unaffected manners and happy looks of one or other of his own daughters. Essentially what is called a "family man," he experienced immense delight in the society of his children, who were treated with the utmost tenderness and consideration. Ultimately, he had eight daughters and three sons; the daughters charming girls, most of them with flaxen ringlets, all with pet names, and so merry and entertaining, that there presence shed a continual sunshine through the dwelling. Two of the girls, Janet and Eliza, were twins, and so closely resembled each other, that you could scarcely have told one from the other—a circumstance which was often diverting in its consequences. Clustered round their mother, Mrs. R. Chambers, a woman of brilliant musical powers, much vivacity, and of literary tastes—the "Mrs. Balderston" of a number of amusing essays—the evening musical parties were now more enjoyable than ever; for by way of variety the girls, in their

childish glee, would sing together some droll and lively ditty, to the delight of the company.

For some purpose connected with his young family, my brother removed to St. Andrews; his residence being a villa called Abbey Park, prettily situated outside the town. While here in 1843 he interspersed his usual literary occupations with writing pieces of verse concerning his chlldren, the daughters, of course, coming in for the largest share of these rhyming fancies. To show how a literary man may gracefully unbend from graver studies to amuse the innocent beings around him, I copy the following verses from his note-book, under date 1843:

A LAY OF ABBEY PARK.

The King of the Fairies was wanting a wife,
And thought he would try the kingdom of Fife:
So he came to St. Andrews, where soon the gay spark
Found his way through the town to sweet Abbey Park;
Rung the bell, was shown in, made an elegant bow.
  Mrs. Chambers requested that he'd take a chair;
He did so, but said that he scarcely knew how
  To begin to inform her about his affair:
The fact was, the Queen of the fairies was dead,
And he wanted again to be happily wed;
So hearing reports of the six Misses C.,
  All booming and handsome (though not much purse),
He thought how exceedingly nice it would be
  If one would take him for better for worse.
His queen, he said, was kept not ill—
  Pin-money handsome, a coach of her own,
A palace built snug in the side of a hill;
  And further, he said, he could not depone.
Mamma thought the offer a capital chance,
So she called in her troop like an opera dance,
And told his kingship that he might
At least of her beauties have a sight;
Papa, she said, would soon be in
  (For he, good man, had gone to golf),
When they might talk of it chin to chin,
  And so it would either be on or off.
Just then comes in Pa, hears the story, quite grave:
"Well, which would your majesty choose to have?
Here's Jane, the eldest, we'll begin with her,
Or I never would hear an end of the stir."
"O," says the king, "she's too much grown,
A full head taller than me, you'll own."
"Well, here's our charming maid, Miss Mary,
Who seems already one half a fairy—
The dark gazelle, the Andalusian!"
"O, such eyes in my kingdom would breed confusion!"
"Then here's Miss Annie, an honest young woman,
Who is fond of every thing that's at all uncommon;
Although in good sense surpassed by few"—
"O, a blonde in Fairyland won't do."

"Well, here are our twins; and first Jenny,
A gentle, benevolent sort of a henny,
Who would tend you kindly if you were sick—
Next pranksome Lizz, full of fun and trick."
"O, these are but one, though two appear;
I couldn't take half a queen, I fear.
I rather would err on the other side,
And have something more than *one* for my bride."
Delighted, cried Pa: "Here's the very thing,
Our Major Amelia, who well can sing,
For she's two pretty misses in one!"
At once, then the king cried: "Done, sir; done!"
So Amelia was dressed in a frock of green,
And away she tripped as the Fairy Queen,
And at Abbey Park ne'er again was seen."

In 1840 Robert was elected a member of the Royal Society of Edinburgh, from which time to 1850 he carried on an extensive epistolary correspondence with men of literary and scientific repute; and at this period he often visited London, where he mingled in the society of men of letters. His mind had become occupied with speculative theories which brought him into communication with Sir Charles Bell, George Combe, his brother Dr. Andrew Combe, Dr. Neil Arnott, Professor Edward Forbes, Dr. Samuel Brown, and other thinkers on physiology and mental philosophy. Of Sir Charles Bell, he says in a note, on hearing of the sudden death of that eminent surgeon and physiologist (1842): "Sir Charles was my father at the Royal Society—a most ingenious, excellent man." He had likewise, in a more particular manner, acquired a fancy for geological investigations, which introduced him to another class of inquirers. Returning to Edinburgh, and residing at Doune Terrace, his house was open to all strangers of literary or scientific tastes who were pleased to visit him; and he now may be said to have acquired a wide circle of acquaintances. His *conversaziones* at this period will still be remembered. Often they had some specific object, such as showing antiquities of historical interest, and saying something regarding them for the amusement of the guests; or of discussing some curious point in geology that had lately been exciting remark; for example, the traces of glacial action disclosed on the face of a huge bowlder by the cutting of the Queen's Drive on Arthur's Seat. With such phenomena as this he was familiar, as is seen by his communications to the Royal Society of Edinburgh.

My brother took up geology, not as a plaything, but as a matter to be pursued with his usual quiet earnestness of purpose. He went off from time to time on trips to different parts of England, Scotland, and Ireland; his explorations, however, being confined in a great measure to the sea-coast, the shores of lakes, and banks of rivers, in order to trace the mutations that had in the course of ages taken place on the earth's surface, as regards the relative level of sea and land.

The result of these excursions, and of much consideration on the subject, was the work, "Ancient Sea-Margins," published in 1848. The facts detailed were geologically instructive, as well as interesting from another point of view; for the explanations regarding raised beaches at once put to flight the mythic legends concerning the old parallel roads of Glenroy, and similar terrace-like appearances.

While partially occupied by pursuits of this kind, and neither from his habits nor inclinations suited to engage in the turmoil of civic administration, he weakly and unfortunately, at the close of autumn, 1848, permitted himself to be brought forward as a candidate for the office of Lord Provost of Edinburgh, which was about to be vacated. The movement, though well meant, was ill-timed. Sectarianism ran high. Means the most unscrupulous were employed to injure him in general estimation. A city for which he had done something not readily to be forgotten, was invoked to do him dishonor. And, as might have been anticipated from his singularly sensitive nature, he threw up his candidature in disgust, leaving the field open to his more favored adversary. The whole thing was a mistake. Robert ought on no account to have suffered himself to be brought into a position so alien to his feelings. He might have been well assured that a rumor to the effect that he was the author of a work which had caused no little exasperation, "Vestiges of the Natural History of Creation," would be used to his disadvantage, and that any thing he might say on the subject would be unavailing. As if to cover the whole affair with ridicule, the theories propounded in the work which caused so much civic commotion, have since been rivaled, if not outdone, in seeming extravagance by Darwin, without incurring any particular animosity. It appears now to be generally recognized that the utmost latitude may be allowed to scientific research and speculation, without endangering the foundations of religious belief; so greatly has the world advanced in liberality of sentiment during the last quarter of a century.

It is grateful to turn from this brief but unpleasant episode to some notice of an excursion which he made to the north of Europe. In the summer of 1848 he had visited Rhineland and Switzerland, with a view to satisfy himself on the subject of glacial action, the theories regarding which, of Agassiz and Forbes, had lately raised much interest among geologists. As Norway was known to offer some striking examples of the effects produced by glaciers, my brother resolved to proceed thither. Quitting Edinburgh in the latter part of June, 1849, he sailed from Hull to Copenhagen; thence he went to Göttenburg, from which he made a deliberate journey through Sweden and Norway, sometimes going by steam-vessels, sometimes by carioles, and at other times by boats on the fiords that indent the coast; but always making explorations on foot wherever it was expedient to do so. The result of the excursion was given in a series of papers in *Chambers's Journal*, at the close of 1849 and beginning of 1850,

under the title of "Tracings of the North of Europe." Besides any scientific value attaching to these papers, they offered amusing sketches of the social condition of the country as far as Hammerfest, or nearly to the seventy-first degree of north latitude.

The accounts given of the simple politeness and kindly hospitality of the people form the most agreeable part of the narrative. These qualities were well exemplified when boating with some fellow-travellers in the Altenfiord. A few passages may here be presented:

SCENE IN NORWAY.

"In the afternoon, after rowing upwards of twenty miles, we began to approach Komagfiord, where we designed to spend the night. The washed, shattered coast here presents remarkable disturbances of the slate strata, with curious interjections, veinings, and contortions. Many blocks appear, lying on the slate, of totally different kinds of rock, and therefore presumably brought from a distance. By-and-by terraces begin to appear, with many of these traveled blocks reposing upon them. Such stones speak, and the tale which they tell is as truthful, perhaps more truthful, than most of those narrated in black and white.

"At length, at an early hour of the evening, we turned into a comparatively small, but sheltered and almost land-locked recess, where we first see palings along the green hill-sides, indicating pastoral farming, and then a neat house seated a little way back from the shore, with a number of smaller buildings scattered near it, including one which advances as a wharf into the sea. That pretty red and yellow mansion, so *riant* with its clean dimity window curtains, and a little garden in front, is the kiopman's house of Komagfiord. It has a small porch in the center, with a wooden esplanade and a short flight of steps descending on either hand. A good-looking man, in the prime of life, leans over the rail at the wharf, to receive us as we land. We are met by him with a few courteous words in English; we present our letter of recommendation for Mr. Buch, the kiopman, who presently appears, a bulkier and older man, of remarkably open genial countenance, reminding me much of Cowper's description, though not exactly true so far as dress is concerned,—

> 'An honest man, close-buttoned to the chin,
> Broadcloth without, and a warm heart within.'

He meets us with welcome, and we are speedily conducted, with our baggage, to the house, a few steps from the shore, where we are at once introduced into a clean parlor, adorned with family portraitures and some of the favorite prints of Sweden and Norway, particularly the never-absent royal family. Mr. Buch, however, does not speak any language besides his own. He only looks the welcome he feels. His wife

presently appears, a pleasant-looking matron; likewise his daughter and sole child, whom we by-and-by discover to be the wife of the younger man. Two or three little children, too, the offspring of the young couple, make their way into the room to see those extraordinary beings, the English strangers. The younger man, Mr. Fantrom, knowing a good deal of English, we speedily, through that channel, become acquainted with the whole of this amiable family, from whom I was eventually to receive a greater amount of kindness than it almost ever was my lot to experience from strangers. We desired, of course, to be considered as travelers taking advantage in all courtesy of the obligation under which the kiopman likes to receive such persons into his house; but it will be found that we could not induce our kind hosts to regard us in that light. The family seemed to be in very comfortable circumstances, and the union in which the three generations lived together was beautiful to contemplate. I shall not soon, I trust, forget the kiopman's house of Komagfiord.

"After the refreshment of tea—for we had taken a good luncheon at sea—we went out to examine the neighboring grounds, and soon ascertained that a terrace of detrital matter and blocks goes entirely round the little valley, at the height of about sixty-four feet above the sea. Walking along it round the angle which divides the fiord from the open sea in Varg Sound, we find it become a terrace of erosion on the rough coast there, with huge blocks every-where incumbering its surface—blocks of foreign rock. Mr. Fantrom obligingly went along with us over this ground, and seemed glad when I could employ him in holding the leveling staff for a few minutes. We soon found him a very sensible, well-informed man, though geology and geodesy were new ideas to his mind.

"The latter part of the evening proved extremely beautiful, and we were tempted to take seats on the esplanade in front of the door, to enjoy the cool but still balmy air, a delightful refreshment after the heat of the day. The little fiord lay like grass below our feet, with a merchant sloop moored in the entrance; the rugged mountains beyond the Sound rose clear into the bright blue sky, where the light was yet scarcely dulled. Mr. Buch sat down with his long pipe, emitting alternate puffs of smoke, and sentences addressed to his son-in-law and grandchildren. The bustle of Mrs. Buch engaged in her household duties made the smallest possible stir within. All besides was as calm as nature before the birth of sound. Having nothing better to do, I proposed at this juncture to bring out my flute, and play a few airs, provided it should be agreeable to all present.

"This being cordially assented to, I proceeded to introduce the music of my native country to these simple-hearted Norwegians. The scenery and time seemed to give magic to what might otherwise perhaps have proved of very little interest; and finding my audience give unequivocal tokens of being pleased with my performance, I was induced to go on from one tune to another for fully an hour.

It was curious to think of my audience hearing for the first time strains which are an inheritance of the heart to every Scottishman from his earliest sense—to myself, for instance, since three years old—and to reflect on some of our national favorites, as the 'Flowers of the Forest,' 'Loch Erroch Side,' and the 'Shepherd's Wife,' now floating over the unwonted ground of a Norwegian fiord. With each air, in general, the idea of some home friend, with whom it is a favorite, was associated. There was scarcely one which did not take my mind back to some scene endeared by domestic affection, or the love which, in common with every Scot, I cherish for the classic haunts of my native land. It was deeply interesting now to summon up all these associations in succession, in the presence of an alien family who could know nothing of them, and to whom it would have been in vain to explain them, but who, from that very incapability of sympathy, made them in the existing circumstances fall only the more touchingly and penetratingly into my own spirit."

On returning from his northern excursion, my brother set to work on a subject for which he had long been accumulating materials—"The Life and Works of Robert Burns." As the brilliant and painful history of Burns had been already written by seven of his countrymen, it might seem unnecessary to resume its consideration. Something, however, was wanting. There still survived persons who were acquainted with the poet, but they were passing away, and now was the time for gathering from them such facts and reminiscences as might serve for a full and authentic biography. Among others whose memory might be reckoned on, was Burns' youngest sister, Mrs. Begg; and she, on being communicated with, entered cordially into the project. George Thomson was also at hand, and glad to be of any service. As regards the works of the poet, a peculiar arrangement was contemplated. This consisted in presenting the various compositions in strict chronological order, in connection with the narrative, so that they might render up the whole light they were qualified to throw upon the history of the life and mental progress of Burns; at the same time that a new significance was given to them by their being read in connection with the current of events and emotions which led to their production. Acting on this plan, and after minute personal investigations, the "Life and Works of Robert Burns" was produced in 1850. It was well received, and passed through several editions, to suit different classes of purchasers.

Already, a small pension on the roll of Her Majesty's Charities and Bounties for Scotland had been granted to Mrs. Begg and her two daughters, and some private efforts had been further made in their behalf. My brother set on foot the collection of a fund, which was moderately successful. In writing from Edinburgh, May 4, 1842, to his wife at St. Andrews, he says: "On Monday, the first fruits of my application for Burns' sister approved in two tributes, one of ten

pounds from Mr. Tegg, bookseller; the other, ten guineas from Mr. Procter, the poet. Is n't that capital?" To increase these resources, the profits of a cheap edition of the "Life and Works of Burns" were set aside. The sum realized was not great, but it helped. Writing under date May 15, 1856, to James Grant Wilson, son of his friend Wilson of Poughkeepsie, and who had lately been in Scotland, Robert says: "I am glad you saw old Mrs. Begg, but it was a pity to miss the black eyes and intelligent face of her daughter, Isabella, who is a charming creature of her kind and sort, and more a reminiscence of Burns than even her mother. Just about a fortnight ago, W. and R. C. had the pleasure of handing two hundred pounds to the Misses Begg, being the profits of the cheap edition of the "Life and Works of Burns" edited by me, as promised by us at the time of publication. This sum will lie at interest, accumulating till Mrs. Begg and her annuity cease, when, with one hundred and sixty pounds of the fund formerly collected for Mrs. B., it will be sunk in distinct annuities for the daughters. The result, with their several pensions of ten pounds, will place them above all risk of any thing like want. They well deserve all that has been done for them by their self-devotion to their mother in less bright days. I have great pleasure in thinking of that happy family on the banks of Doon, and reflecting on the little services I have been able to render them."

In June, 1855, he had an excellent opportunity of visiting the Faröe Islands and Iceland, and this, for geological reasons, he did not neglect. The *Thor*, a Danish screw war steamer, touched at Leith on its way to Iceland, and at a certain charge six gentlemen were accommodated as passengers. It was a pleasant trip. Reikiavik, the capital of Iceland, was reached in safety; and in a day or two began a journey, in a rude fashion, on the backs of ponies, to the famed Geysers, a distance of seventy miles across a wild country, with no proper places for rest or lodging. Yet, as he describes the excursion, it was, though rough, a novel, hilarious affair after all. At Thingvalla, the only accommodation for the night was to bivouac in the church, and the only means of lingual communication with the clergyman who acted as host, was in a corrupt Latin. Robert made his couch in the pulpit. On the second day the party got to a farm-house in the vicinity of the Geysers; and next morning some of these hot-water volcanoes were in ebullition. The chief curiosity is the Great Geyser, a kind of well, nine feet in diameter, and eighty-seven feet deep, from which were seen thrown up violent jets of water to a height of from seventy to a hundred feet. The heat of the water is extraordinary. "It has been found that the water of the Great Geyser at the bottom of the tube has a temperature higher than that of ordinary boiling water, and this goes on increasing till an eruption takes place, immediately before which it has been found as high as 261° Fahrenheit," or 49° above ordinary boiling-point, a circumstance inferring enormous com-

pression under violent heat, until the water bursts out into the atmosphere.

Returning by the way they had come, the excursionists were again glad to take up their quarters in the establishment of the parish minister, who, it appeared on a cross-examination in Latin by my brother, supported a wife and eight children, performed his parochial duties, and traveled once a month to a preaching station eighteen miles distant, all for five-and-twenty pounds a year. "We could not but wonder how so large a family, besides a horse, could be supported on means so small. In wandering about the place, I lighted upon his little stithy, which reminds me to tell that in Iceland a priest is always able to shoe your horses if required. The little book in which these particulars were given, entitled "Tracing in Iceland and the Faröe Islands," was published in 1856.

A number of years had elapsed since he wrote a "History of Scotland" for a series of books issued by Richard Bentley. The subject was so familiar, that he now applied himself with zest to a work entitled the "Domestic Annals of Scotland." It was comprised in three volumes. Two of these were issued in 1859, and a third appeared in 1861. The period over which the annals extended was from the Reformation to the Rebellion of 1745, nearly two hundred of the most interesting years in Scottish history. The work, however, was not a history in the usual sense of the word. It consisted of a chronicle of occurrences of a familiar, sometimes amusing nature, beneath the region of history, but calculated to convey a correct notion of the manners, customs, passions, superstitions, and ignorance of the people; the pestilences, famines, and other extraordinary events which disturbed their tranquillity; the traits of false political economy by which their well-being was checked; and generally those things which enable us to see how our forefathers thought, felt, and suffered, and how, on the whole, ordinary life looked in their days. The materials for this assemblage of facts were searched for in public records, acts of parliament, criminal trials, private diaries, family papers, histories, biographies, journals of transactions, etc.; the whole amounting to nearly a hundred different authorities, while the passages selected were so strung together chronologically as to offer a progressive picture of the times. On this work, so laborious, yet coincident with his feelings, he occupied himself at times during five years without in any respect remitting his writings for *Chambers's Journal.*

About this time (1860), he edited and wrote an introductory notice to a volume purporting to be the "Memoirs of a Banking-house," by Sir William Forbes, of Pitsligo, Bart., author of the life of the poet Beattie. The banking-house so signalized was that which was set on foot in Edinburgh by John Coutts & Co., who occupied as business premises an upper floor in the Parliament Close. The Coutts family were from Montrose, and began as corn-merchants and negotiators

of bills of exchange. One of them, John Coutts, was Lord Provost of Edinburgh in 1742. He had four sons—Patrick, John, James, and Thomas. By these the business was continued, and received as apprentice the youthful Sir William Forbes, in 1754. In the whole round of biography, there is nothing finer by way of example to the young than the life of Sir William Forbes. Born in 1739, heir to a baronetcy, and left fatherless at four years of age, without patrimony, he was, commercially speaking, a self-made man, though, like many youths in similar circumstances, he owed much to the care of an amiable and intelligent mother, who, dwelling in a small house in one of the dingy lanes of Edinburgh, maintained on the most slender means the style and manners of a lady. Her son, Sir William, a boy fourteen years of age, instead of being bred to one of the "learned professions," was put apprentice to Messrs. Coutts; from an apprentice, he became a junior clerk; from a clerk, he rose to be a partner; and finally, when several of the partners died or quitted Edinburgh, the firm was transformed into that of Sir William Forbes & Co., of which he was the leading member. The firm, as is well known, is now merged in the Union Bank of Scotland.

Sir William, as we learn from the memoir, was reared, and acquired strict habits of business, chiefly under the eye of John Coutts; for Thomas, his brother, the youngest son of the Lord Provost, removed to London. There, founding the banking concern of Coutts & Co., he died in 1822, at about ninety years of age; his youngest daughter Sophia, married to Sir Francis Burdett, being mother of the much-esteemed Baroness Burdett Coutts. The memoir, which contains many curious particulars about banking in the olden time, was written by Sir William Forbes, with a view to impress his son and successor with the paramount importance of exercising, with diligence in his profession, the highest principles of integrity, for only by such could he expect to sustain the enviable reputation of the house. The universal mourning on the death of Sir William Forbes, in 1806, shortly after he had completed his "Life of Beattie," caused Sir Walter Scott to refer to him in one of the cantos of "Marmion," when addressing the amiable banker's son-in-law, and the poet's friend, Mr. Skene, of Rubislaw:

> "Scarce had the lamented Forbes paid
> The tribute to his minstrel's shade,—
> The tale of friendship scarce was told,
> Ere the narrator's heart was cold.
> Far we may search before we find
> A heart so manly and so kind."

In editing the autobiography of this distinguished banker, my brother enjoyed a pleasure instead of performing a task. The same might be said of a series of detached papers, written at spare intervals, or to deliver as lectures. The subjects of these tracts, ultimately

issued in 1861 under the title of "Edinburgh Papers," were various—old domestic architecture, merchants and merchandise in old times, the posture of the scientific world, some notions on geology, and the romantic Scottish ballads. By this last-named paper, the accepted opinions regarding several popular ballads, as given by Percy and Scott, were considerably ruffled. In it he ventured to show that, so far from being ancient, these ballads had been written, in an affectedly old style, not earlier than the beginning of the eighteenth century—the surreptitious manufacture being executed by a woman clever at versification, Lady Wardlaw, of Pitreavie. Professor Aytoun, among others, was, of course, not well pleased at this unhappy overturn of certain literary traditions, but could not disprove the accuracy of the view that had been adopted. There was, at the time considerable discussion on the subject.

My brother and I had talked of visiting the United States and Canada. We had pretty extensive business relations in these countries; but what chiefly interested us was the social aspect of affairs beyond the Atlantic. I was able to make this desired trip in 1853, the account of which appeared as "Things as they are in America" (1854). Robert's excursion was postponed for a few years longer.

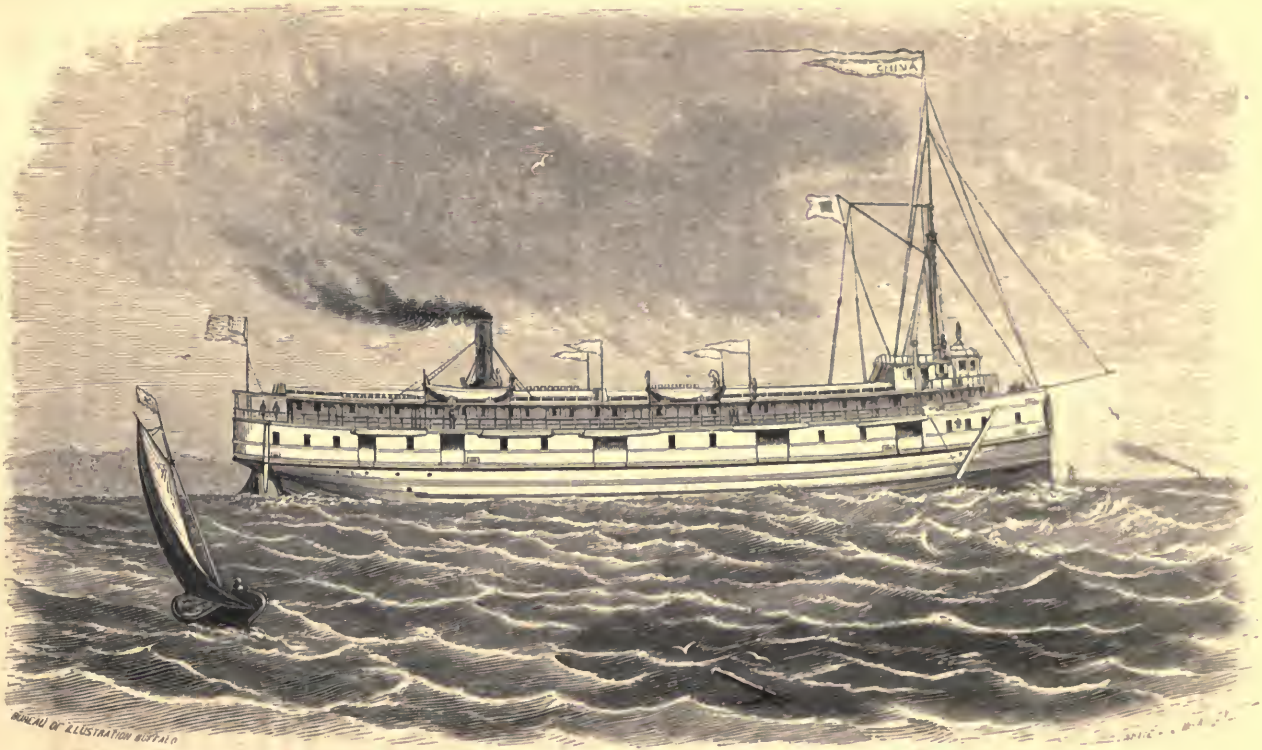
When the old Theater Royal in Edinburgh was about to be taken down in 1859, in order to make way for the new General Post-office, he, at the request of some amateurs of the drama, wrote a historical sketch of the old building, with its successive managers, and the great theatrical stars who had made their appearance on its stage. The pamphlet was a trifle, but not devoid of some amusing particulars; for example, the account given of the visit of Mrs. Siddons, in May, 1784, when she performed twelve nights, extending over a period of three weeks, and during which she played her principal characters, including Mrs. Beverly, Jane Shore, Isabella, Lady Randolph, and Euphrasia in the "Grecian Daughter:"

MRS. SIDDONS.

"The furor created in the town by the performances of this illustrious lady was extraordinary. Prodigious crowds attended hours before the performance for the chance of a place. It came to be necessary to admit them at three, and then people began to attend at twelve to get in at three. The General Assembly of the Church, in session at the time, found it necessary to arrange their meetings with some reference to the hours at the theater, for the younger members had discovered that attendance on Mrs. Siddons's performances was calculated to be of some advantage to them as a means of improving their elocution. People came from distant places, even from Newcastle, to witness what all spoke of with wonder. There were one day applications for 2,557 places, while there were only 630 of that kind in the house. Porters and servants had to bivouac for a

night in the streets on mats and palliasses, in order that they might get an early chance of admission to the box-office next day. At the more thrilling parts of the performance the audience were agitated to a degree unprecedented in this cool latitude. Many ladies fainted. This was particularly the case on the evening when 'Isabella, or the Fatal Marriage,' was performed. The personator of Isabella has to exhibit the distress of a wife on finding, after a second marriage, that her first and loved husband, Biron, is still alive. Mrs. Siddons herself was left at the close in such an exhausted state that some minutes elapsed before she could be carried off the stage. A young heiress, Miss Gordon of Gight, in Aberdeenshire, was carried out of her box in hysterics, screaming loudly the words caught from the great actress: 'O, my Biron! my Biron!' A strange tale was therewith connected. A gentleman, whom she had not at this time seen or heard of, the Honorable John Biron, next year met, paid his addresses, and married her. It was to her a fatal marriage in several respects, although it gave to the world the poet Lord Byron. Strange to say, a lady lived till January, 1858, the Dowager Lady G——, who was in the house that evening, and who never could forget the ominous sounds of 'O, my Biron!' The writer of this little memoir has heard the story related by another lady, who was also in the house that night, and who died in 1855. By her performances in Edinburgh on this occasion Mrs. Siddons cleared 1,000*l.*, her benefit alone yielding 350*l.*; all this being over and above the profits of a night given to the Charity Work-house. It was remarked that the doctors ought to have given her a piece of plate, for there prevailed for some time after her visit a disorder called the 'Siddons fever'—a pure consequence, as was believed, of the unusual exposure, excitement, and fatigue to which she had been the means of subjecting a large part of the community."

Robert, accompanied by his wife, effected his long desired visit to America in 1860, every-where receiving much attention from men of literary and scientific tastes. Unfortunately, his dear old friend and correspondent, Willie Wilson, had died shortly before his arrival in the country. Of his extensive excursion my brother did not give any regular account, but contented himself with writing two or three articles in *Chambers's Journal*. One of these, entitled "A City Elevated," was a description of the method of raising houses bodily four to five feet above the level on which they had been built, without the slightest derangement to the walls or contents of the building. This extraordinary method of elevation he saw at Chicago in October, 1860, the object of the process being to raise the rows of dwellings sufficiently high above Lake Michigan to give an outfall to the drainage of the town. The work, he says, was executed by contract, the raising of a hugh pile of buildings costing 3,500*l.* This process of house-raising seemed to him a wonderful novelty in



Lake Steamer China.

BUFFALO, 1872.

engineering. A few passages as to how the thing was done may be quoted:

A CITY ELEVATED.

"The first step is to scarify away all the ground or fabric of any kind around the base of the building, supplying, however, provisional galleries and gangways for the use of the public during the process of elevation. Then the earth is dug out from under a portion of the foundations and strong beams inserted, supported by rows of jack-screws set together as closely as possible. When this is properly arranged another piece of the foundations is removed in like manner, and so on till beams with jack-screws are under every wall of the mass of building. In the case of the block in question, there were in all six thousand screws employed.

"The next step is to arrange for putting the screws into action. To every ten a man is assigned, furnished with a crowbar. At the signal of a whistle he turns a screw one-fourth round, goes on to another which he turns in like manner, and so on till all are turned. The screw having a thread of three-eighths of an inch, the building has thus been raised a fourth part of that space throughout, or exactly 3-32d of an inch. The whistle again sounds; each crowbar is again applied to its series of ten screws, and a similar amount of vertical movement for the whole building is accomplished. And this operation is repeated till the whole required elevation is accomplished. When the desired elevation is attained, the beams are one by one replaced with a substructure of masonry, and the pavement is restored on the new level. In this case the elevation of four feet eight inches was accomplished in five days, and it is stated that the cost of new foundations and pavement was from forty to fifty thousand dollars. The block, which was full of inhabitants, contained much plate-glass, elegantly painted walls, and many delicate things; but not a pane was broken, a particle of plaster or paint displaced, nor a piece of furniture injured. The writer deems it not superfluous to say, that he saw and partly inspected this mass of building, and certainly found nothing that could have led him to surmise that it had originally rested on a plane nearly five feet below its present level.

"Let us English people ponder on these heroic undertakings of our American cousins. They are well worthy of imitation. It is the misfortune of many of our cities that large portions of them are built on ground so little above the level of an adjacent river as to be but imperfectly drainable. Southwark is a notable example, and Belgravia, with finer buildings, is no better off in this important respect. Sanitary considerations point out how desirable in these cases it is that the buildings should be raised a few feet. Chicago, a town of yesterday, scarcely yet to be heard of in geographical gazetteers, has shown that it can be done, and, comparatively speaking, at no great expense."

We now approach the end. On my brother's return from America, there were consultations on the project of a work, likely to be successful, but which could not be executed in Edinburgh. It required the resources of the British Museum. For this purpose it was resolved that he should migrate, with his family, to London, if his stay should be only for a few years. So to London he went, his residence being in one of the pleasant villas at St. John's Wood. The work which had suggested this wrench in accustomed habits was the "Book of Days," a miscellany of popular antiquities in connection with the calendar, including anecdotes, biographies, curiosities of literature, and oddities of human life and character. Formed somewhat on the plan of Hone's "Every-Day Book," the work was considerably more elaborate and searching.

It is painful to relate what happened. Some anticipated help having failed, and forced to rely too exclusively on himself, his mental powers underwent a strain they were ill able to bear. The work was finished, but the author was finished also. Not that he died on the spot, but his system was shattered, and he could not in future incur any continuous exertion. To aggravate his disorder, he experienced some sad domestic bereavements. In September, 1863, he lost his wife, and almost immediately thereafter Janet, a favorite twin-daughter of much promise. Like most other works he produced, the "Book of Days" proved a success. But at what a cost! He was heard to say: "That book was my death-blow," and such it really was.

Returning to Scotland in an enfeebled state of health, my brother took up his residence in St. Andrews, a place to which he had twenty years previously become attached, on account of its agreeable society, its bracing atmosphere, and its extensive links, or downs, noted for the game of golf, a healthful out-door amusement, not demanding too great an amount of physical exertion. There we may leave him for a little space, in the society of his youngest and unmarried daughter, Alice—his windows overlooking the Firth of Tay, and the celebrated Bell-rock Light-house flashing far in the east, like a lustrous gem on the bosom of the German Ocean.

A SKELETON IN THE HOUSE, AND OTHER MATTERS.

There is a skeleton in every house! All have some thing or other to trouble them, however well off and at ease they may appear to be. For twenty-one years after the commencement of *Chambers's Journal*, and while all seemed to be going on prosperously, my brother and I were plagued with a skeleton, of whom the world had no means of being cognizant. The nature of the skeleton was this. Operating from Edinburgh as a center, we had necessarily to intrust a large commission business to a bookseller in London, who had us pretty much at his mercy. Things might be going right or wrong with him, for any thing we could satisfactorily discover. At first, there

was no cause for uneasiness; but in the progress of events, when a small grew into a great concern, we could not divest ourselves of apprehensions of a catastrophe.

Such was our skeleton! Perhaps we were no worse off than our neighbors, but that is always a poor consolation. We might possibly have rid ourselves of the skeleton. That, however, would perhaps only have amounted to a substitution of a new for an old source of distrust. So we were fain to temporize, and to make the best of things as they stood. In a social point of view, we were on excellent terms with the personality of our skeleton, and there was not a little pleasant intercourse among us. I was often for weeks in London; and by these visits an acquaintanceship was kept up with various esteemed contributors, among whom we had great pleasure in numbering Mrs. S. C. Hall, who wrote for us some admirable stories of Irish life, and through whom we procured a juvenile story from the venerable Maria Edgeworth.

On one of these occasions of visiting the metropolis, a new and unexpected acquaintance was formed. It was in 1844, when residing in Greek street, Soho. One day, about noon, a carriage drives up to the door—not a vehicle of the light, modern sort, but an old family coach, drawn by a pair of sleek horses. From it descends an aged gentleman, who, from his shovel hat and black gaiters, is seen to be an ecclesiastical dignitary. I overhear, by the voices at the door, that I am asked for. "Who, in all the world, can this be?" A few minutes solve the question. Heavy footsteps are heard deliberately ascending the antique balustraded stair. My unknown visitor is ushered in—his name announced: "The Rev. Sydney Smith." I hasten to receive so celebrated a personage as is befitting, and express the pleasure I have in the unexpected visit—wondering how he had discovered me.

"I heard at Rogers's you were in town," said he, "and was resolved to call. Let us sit down and have a talk." We drew towards the fire, for the day was cold, and he continued: "You are surprised possibly at my visit. There is nothing at all strange about it. The originator of the *Edinburgh Review* has come to see the originator of the *Edinburgh Journal*."

I felt honored by the remark, and delighted beyond measure with the good-natured and unceremonious observations which my visitor made on a variety of subjects. We talked of Edinburgh, and I asked him where he had lived. He said it was in Buccleuch Place, not far from Jeffrey, with an outlook behind to the Meadows. "Ah," he remarked, "what charming walks I had about Arthur's Seat, with the clear mountain air blowing in one's face! I often think of that glorious scene." I alluded to the cluster of young men — Jeffrey, Horner, Brougham, himself, and one or two others, who had been concerned in commencing the *Review* in 1802. Of these, he spoke with most affection of Horner, and specified one who, from his van-

ity and eccentricities, could not be trusted. Great secrecy, he said, had to be employed in conducting the undertaking, and this agrees with what Lord Jeffrey told my brother. My reverend and facetious visitor made some little inquiry about my own early efforts, and he laughed when I reminded him of a saying of his own about studying on a little oatmeal—for that would have applied literally to my brother and to myself. "Ah, *labora, labora*," he said sententiously, "how that word expresses the character of your country!"

"Well, we do sometimes work pretty hard," I observed; "but for all that, we can relish a pleasantry as much as our neighbors. You must have seen that the Scotch have a considerable fund of humor."

"O, by all means," replied the visitor; "you are an immensely funny people, but you need a little operating upon to let the fun out. I know no instrument so effectual for the purpose as the corkscrew!" Mutual laughter, of course.

There was some more chat of this kind, and we parted. This interview led to a few days of agreeable intercourse with Sydney Smith. By invitation, I went next morning to his house in Green street, Grosvenor Square, to breakfast; and the day following, went with him to breakfast with a select party, at the mansion of Samuel Rogers, St. James's, when there ensued a stream of witticisms and repartees for pretty nearly a couple of hours. This was assuredly the most pleasant conversational treat I ever experienced. On quitting London, I bade good-by to Sydney Smith with extreme regret. We never met again. He died in February the following year.

Years pass on; in each excursions being made with some literary object in view. While residing in London, in 1847, I was honored with the acquaintance of Miss Mitford, whom I visited by invitation at her neat little cottage, Three-mile Cross, near Reading; the pleasantest thing about the visit being a walk with the aged lady among the green lanes in the neighborhood—she trotting along with a tall cane, and speaking of rural scenes and circumstances. I see by the lately published life of Boner, that in a letter to him, under date December 16, 1847, she refers to this visit, stating that she was at the time engaged along with Mr. Lovejoy, a bookseller in Reading, in a plan for establishing lending libraries for the poor, in which, she says, I assisted her with information and advice. What I really advised was that, following out a scheme adopted in East Lothian, parishes should join in establishing itinerating libraries, each composed of different books, so that, being shifted from place to place, a degree of novelty might be maintained for mutual advantage.

In 1848, I visited Germany, mainly to look into educational and penal arrangements; and at Berlin, through the polite attention of Professor Zumpf, had the satisfaction of becoming acquainted with the Prussian compulsory system of education, which, in its later de-

velopments, has had so startling an effect on the affairs of continental Europe.

I had visited France several times: to see the extinct volcanoes of Auvergne, and the Roman remains of Provence; to see the prison discipline at Roquette and Fontrevault, and the juvenile reformatory at Mettray; to see Voisin's method of rousing the dormant intellect of imbecile children at the Bicêtre, and so on. I again visited the country in 1849; and on this occasion remaining longer than usual in Paris, and seeing more of the social life of the people. For this, let me acknowledge myself indebted to the Dowager Countess of Elgin (a Scottish lady of the Oswalds of Dunnikier), who found me out in the Boulevard des Italiens, and introduced me along with my wife to an agreeable literary circle, including M. Lamartine, M. Mohl and Leon Faucher. Lamartine—tall, thin, and unimpassioned—the center of a group of admirers, listened with cold complacency when I told him that translation of his "Voyage en Orient" had been eminently popular in England. Faucher was greatly more conversible. He was interested in hearing about our system of poor-laws, municipal government, and other topics connected with social economy, on which I did my best to give him some information.

On one of these evenings, I was introduced to a young Frenchman, son of a noted revolutionist, during the Reign of Terror, who had afterwards saved his life by hiding himself, and changing his name, until he could again appear publicly. He had recently died, and his whole effects were about to be sold, in order that the produce might be equally divided among his family. The articles were said to be curious; and such I found to be the case, on going by invitation to see them in an old dignified mansion, near the Temple—the most curious thing of all being the identical proclamation which Robespierre had begun to write at the Hotel de Ville, when his assailants burst in upon him, and he was shot through the jaw. He had got only the length of scrawling the words, "*Courage mes compatriotes,*" when, being struck, the pen fell from his hand, and big drops of blood were scattered over the paper. Bearing these marks of discoloration, how strange a memorial of the horrors of 1794!

I was much delighted with the simplicity and inexpensiveness of the evening parties at the house of the countess, which was situated in the neighborhood of the Rue de Bac, and had been a palace of some pretension in the days of the old monarchy. People came to see and converse with each other—not ceremoniously to eat and drink, and go away in a state of discomfort. The few weeks I spent in Paris on this occasion were among the most delightful in my whole existence.

How my brother and I, as fancy directed, should have had leisure to spend months in rambling up and down the world, is worth a little explanation. In one of Robert's essays he moralizes on the advantage of blending with pursuits that amount of leisure which

will enable us to cultivate the higher class of feelings; for, by neglect on this score, life in the long-run will only be looked back upon as a disappointing dream. On principles of this kind, we endeavored to act, but could have obtained no success in the attempt, by following the too common practice of hurrying into one project after another, irrespective of consequences. At the outset, we laid down three rules, which were inflexibly maintained: Never to take credit, but pay for all the great elements of trade in ready money; never to give a bill, and never discount one; and never to undertake any enterprise for which means were not prepared. Obviously, by no other plan of operations could we have been freed from anxiety, and at liberty to make use of the leisure at our disposal.

No anxiety?—yes, there was some. We had still the skeleton, which had so grown and grown in dimensions as to be at length truly formidable. About 1852 matters became critical. It was as clear as could be that we were to incur a heavy loss. In nothing in his whole life did my brother manifest more vigor of character than in determining to get rid, at all hazards, of this source of disquietude. He thought of Scott and the Ballantynes, and how, by an extreme and misplaced confidence, arising from kindness of heart, a man may be irretrievably ruined. Without further periphrasis: taking all risks, we withdrew our agency in 1853, and established a branch business in London under charge of our youngest brother, David—the Benjamin of the family—on whose fidelity we could rely.

Now comes a startling and melancholy fact, from which it would not be difficult to draw a moral. The concern that had for twenty-one years possessed our agency, had reaped a profit from it of not much short of forty thousand pounds—a sum equal to about eight times what Gibbon received for his "Decline and Fall of the Roman Empire," and eighty times what poor Robert Burns ever received for all his world-famed writings! All was gone, and a vast deal more—vanished into empty space. A fortune, such as few are born to, had been absolutely thrown away.

The whole of this affair, with some collateral circumstances, reviewed over a course of years, furnished an interesting and not uninstructive commercial study. In London, as any one may observe, there are two prevailing methods of ruination: extravagance in living, and trading beyond means; substituting sanguine expectations, along with borrowed money, for capital. Such, no doubt, are errors everywhere, but in the metropolis they revel without restraint, almost without rebuke. And from the glimpses obtained, I regret to say, they are not unknown in certain sections of the publishing profession. In whatever department of trade, so frightful is the hurry, that means are not suffered to accumulate in order to allow of ready-money payments. The whole transactions subside into a system of bills—bills to wholesale stationers, bills to printers, bills to artists, bills to writers, bills to every body. In the same wild way, bills that

are received are hurried off for discount. There is great seeming prosperity, but so is there too frequently a great bill-book—dismal record of difficulties and heart-aches. The chief difficulty is how to effect discounts. Hours are perhaps spent daily in the effort. Commercially, there is a struggle between life and death every four-and-twenty hours. Who would covet existence on such terms?

The banks, somehow, fail to monopolize the discount trade. They are rivaled by private capitalists, who, in ordinary slang, are known as "parties." There is always a "party"—some mysterious being who lives at Bath, or Boulogne, or somewhere—to whom, through a "party" more immediately visible, succor is looked for in emergencies. The "party" dealt with is sometimes a mighty pleasant and presentable person—jolly, good-natured countenance; punctilious in dress; abounding in anecdotes about the drama and the "Derby;" well read, and, avowing a high opinion of Campbell as a poet, can give with proper effect quotations from the "Pleasures of Hope." Meeting him at a ceremonious family dinner, you would never, from his appearance and high-souled chivalric ideas, take him for a "party," but half the guests know that he possesses that imposing character in relation to the unfortunate host, whom he could any day crumple up at pleasure, and only bides his time to do so. When Junius made the famous remark, that "party is the madness of many for the gain of a few," he spoke the truth in more ways than one.

Usually, in one way or other, the money-lending "party" becomes the final beneficiary. Should the advances be made to some unhappy publishing concern, copyrights are assigned in security, and seldom do they return to their original owner. Valuable literary property, the fruit of ingenuous conception and enterprise, is thus constantly undergoing a process of transfer and confiscation. We may feel shocked with the tyranny of capital, but the blame is due to the extravagant credit system, along with an insane overhaste to be rich; along, also—for we must not forget that—with an insane extravagance in living, which yields comfort to neither body nor mind; this, however, is a circumstance so very commonplace as to engage little or no attention.

It will be remembered how James King, our early friend and fellow-laborer in scientific experiments, had emigrated to Australia, in order to follow out an industrial career. From one thing to another, he became proprietor of vineyards at Irawang, New South Wales, and there devoted himself to the perfection of the wine manufacture in the colony. In this pursuit he was, by his chemical knowledge, perseverance, and enterprise, eminently successful; but what avails professional eminence with loss of health? Returning to England, he traveled over the continent, and established a friendship with Baron Liebig, who furnished valuable suggestions as to improving the quality and aroma of his wines. Hints of this kind, however, he did not live to profit by. I found him in London, a wreck—sad contrast to

what he had been when departing, as a high-spirited youth, to push his fortune abroad. A renewal of intercourse was scarcely practicable, for he heard and spoke only with difficulty. He died in London in 1857, leaving a widow and son to conduct his affairs in the colony.

Amidst literary and other avocations, my brother and I never forgot Peebles. We visited the place—notably so in 1841, to be complimented with the "Freedom of the Burgh"—and tried to keep up an acquaintance with old friends, ever diminishing in number till scarcely one of them was left. Remembering the benefits we had received from Elder's library—long since extinct—in 1859, I gifted to the town a suite of buildings consisting of a library of ten thousand volumes, reading-room, museum, gallery of art, and lecture-hall, with the view of promoting the mental improvement of the humbler classes; but whether the institution so organized will have any such effect, seems, after an experience of twelve years, exceedingly doubtful. So slight has been the success, that others may well pause before venturing on a similar experiment. Perhaps the only other incident concerning myself worthy of notice, is that of having been elected Lord Provost of Edinburgh in 1865—an office that was held by me for four years, and regarding which little is left to reflect on with satisfaction, but the circumstance of having projected and obtained an act of Parliament for the sanitary improvement of the city.

While giving some attention to *Chambers's Journal*, now in its forty-first year, it may be permitted me to mention that latterly I was able to add a few books to the list already mentioned: "The Youth's Companion and Counselor," 1860; "Something of Italy," 1862; "History of Peeblesshire," 1864; "Wintering in Mentone," 1870; and "France: its History and Revolutions," 1871.

It is not for me to say a single word regarding the influence which *Chambers's Journal*, and other publications, edited by my brother and myself, may have exerted in the cause of popular enlightenment during the past forty years. Of that, the public must be the judge. Much more pleasing is it to think that the mass of cheap and respectably conducted periodical literature, which sprung intermediately into existence under a variety of conditions and auspices, has proved one of the many engines of social improvement in the nineteenth century. Referring to the example of patience which was set by the operatives of Lancashire under the agonizing calamity of famine which unhappily visited them, a minister of the crown did not hesitate to declare "that to the information contained in the excellent cheap papers of this country he attributed much of the calm forbearance with which the distressed had borne their privations."* This unexpected acknowledgment receives significance from the fact—which history will scarcely fail to notice—that the state, under successive ministries,

* Right Hon. Mr. Milner Gibson's speech at Ashton-under-Lyne, January 21, 1863.

so far from facilitating the diffusion of a cheap and wholesome literature, unconsciously did all in its power for its repression, by means of exorbitant excise duties on paper, the removal of which was effected only after a long and costly process of popular agitation. In plain terms, the cheap press, in its early and struggling stages, owes nothing to the state, and it may be added, little to the learned and affluent. It has grown up by the force of circumstances, not by any special favor. Looked superciliously on throughout, it had its origin in the People, and from the People alone has it received substantial support and encouragement.

ROBERT'S CLOSING YEARS AND LITERARY REMAINS.

Change of air and scene is said to work wonders on the overtasked brain. It did so to a certain extent on Robert. The fresh air and tranquillity of St. Andrews, with some moderate exercise at golf, had a beneficial effect on his health. He wished for peace, and here it was, enlivened with converse in the society of old friends. He had built for himself a house, with a spacious saloon-library, entering from which was a small apartment fitted up as a study. Environed by his books, a very choice collection, he was now enjoying a luxurious and "learned leisure." All task-work was at an end. Sometimes he came for a few days to Edinburgh; and, extending his journey, he occasionally visited Mrs. Priestley in London, or some other of his married daughters. At the new year, as long as he was able, he made an excursion across the Tay to Fingask Castle, in the Carse of Gowrie, to pass a day or two according to old fashions with his friends, the Thrieplands.

No house, to look at, could be more pleasant than that which he had constructed according to his fancy at St. Andrews. In it he constantly received company, and was always the same kindly and entertaining host. But apart from these receptions, his establishment was cheerless, contrasted with former days, when his home was enlivened by a troop of merry-hearted girls. Possibly it was from a sense of comparative solitude, that he formed a second matrimonial alliance. He married (January, 1867) the widow of Robert Frith, a lady of musical accomplishments, and of that liveliness of disposition which was calculated to soothe his declining years.

In 1868, the University of St. Andrews conferred on him the honorary degree of LL. D. He was after that known as "the Doctor," and the doctor's dinner and evening parties had something in them of the smack of old times. All could see that he was gradually declining in health; but then he never failed in his accustomed cheerfulness, his love of music, and his anecdotic, though now slowly uttered remarks.

The pen was now taken up only as an amusement; but such was the pleasure he derived from writing, that he felt as if the abandon-

ment of literary exercise would kill him outright. Little by little, he finished a book that he had long been employed upon. It was the "Life of Smollett," interspersed with characteristic specimens of his writings. This was a slight work, in one volume, but which had the recommendation of adding something to the personal history of Smollett and his family, and presenting a curious fragmentary memoir, written by the novelist's grandfather, Sir James Smollett, a stern old Whig Presbyterian, knighted by William III. This was the last of my brother's printed productions, and with it his literary career closes.

No one can live at St. Andrews without taking keenly to golf. It is the staple out-door recreation of the place. The links over which it is played are peculiarly favorable for the game, because the ground is beset with that amount of difficulties which gives a piquancy to the sport. There are nine holes in the links, as so many goals to be successively reached by the golfer in making his round. These holes formed a theme for a series of half-comic, half-moralizing sonnets, which were intended to be nine in number. My brother, however, completed only the following three:

THE NINE HOLES OF ST. ANDREWS.

IN A SERIES OF SONNETS.

1. *The Bridge Hole.*

"Sacred to hope and promise is the spot—
To Philp's and to the Union Parlor near,
To every golfer, every caddie dear—
Where we strike off—O, ne'er to be forgot,
Although in lands most distant we sojourn.
But not without its perils is the place;
Mark the opposing caddie's sly grimace,
Whispering, 'He's on the road!' 'He's in the burn!'

"So is it often in the grander game
Of life, when, eager, hoping for the palm,
Breathing of honor, joy, and love, and fame,
Conscious of nothing like a doubt or qualm,
We start, and cry: 'Salute us, muse of fire!'
And the first footstep lands us in the mire.

2. *The Cartgate Hole.*

"Fearful to Tyro is the primal stroke,
O Cartgate, for behold the bunker opes
Right to the teeing place its yawning chops,
Hope to engulf ere it is well awoke.

That passed, a Scylla in the form of rushes
Nods to Charybdis which in ruts appears:
He will be safe who in the middle steers;
One step aside, the ball destruction brushes.

"Golf symbols thus again our painful life,
Dangers in front. and pitfalls on each hand:
But see, one glorious cleek-stroke from the sand
Sends Tyro home, and saves all further strife!
He's in at six—old Sandy views the lad,
With new respect, remarking, 'That's no bad!'

3. *The Third Hole.*

"No rest in golf—still perils in the path:
Here, playing a good ball, perhaps it goes
Gently into the *Principalian Nose*,
Or else *Tam's Coo*, which equally is death.
Perhaps the wind will catch it in mid-air,
And take it to the *Whins*—'Look out, look out!'
Tom Morris, be, O be a faithful scout!'
But Tom, though *links-eyed*, finds 't not anywhere.

"Such thy mishaps, O merit: feeble balls
Meanwhile roll on, and lie upon the green;
'Tis well, my friends, if you, when this befalls,
Can spare yourselves the infamy of spleen.
It only shows the ancient proverb's force,
That you may farther gow and fare the worse."

Those who were unacquainted with his private habits of thought may be surprised to know that, chiefly about this time, he wrote a number of prayers, and graces to be said at meals, all breathing the purest religious spirit. He began the "Life and Preachings of Jesus Christ, from the Evangelists." It was a work apparently designed for the edification of youth, and was left unfinished. He likewise began a catechism for the young, which he did not live to complete. The reminiscences of his early life, from which some extracts have been given, were also among his latest compositions. The mass of papers which he accumulated, and left as literary remains, is indescribable in variety. A considerable number of these fragments refer to Scottish Songs and Ballads, for which he entertained a great affection; and this reminds me, that with some trouble he collected, from the singing of old persons in Liddesdale and elsewhere, the airs of twelve of the Border Ballads, and had them printed for private circulation, in 1844.

One of the more bulky papers which he left is a species of inquiry into the so-called manifestations of spiritualism. Without pronouncing an opinion dogmatically, he considered the subject worthy of patient investigation. "The phenomena of spiritualism," he says, "may be the confused elements of a new chapter of human nature, which will only require some careful investigation to form a respectable addition to our stock of knowledge. Such, I must confess, is the light in which it has presented itself to me, or rather the aspect which it promises to assume." Acknowledging so much, perhaps he thought of a saying he had heard used by Sir Walter Scott, that, "If there be

a vulgar credulity, there is also a vulgar incredulity." In his anxiety for fair-play, he perhaps leant to the side of credulity.

Among the papers amassed by my brother, some old and some new, we have the evidence of a mind that for half a century had never been free from some kind of literary assiduity. His casual thoughts, things he heard spoken of, anecdotes, stories, fragments of family history,—all, sooner or later, assumed shape in sentences and paragraphs. He never forgot any thing. His memory, from a faculty of concentrativeness, was altogether remarkable. He could tell you any date in history; he remembered all the people of any note he had conversed with, and how they looked, and what they said, if it was at all worth remembering. Every place he had visited was fresh in his recollection.

With a memory so stored, he was always writing down odds and ends, as if assembling materials for books, which years would have been required to work into shape. To give an idea of these memoranda, I select the following, some of them being from a small note-book with dates:

ANECDOTE OF HUGH CHISHOLM.

"Shortly after writing the 'History of the Rebellion,' I heard an anecdote of two Jacobites,—one of them, Colquhoun Grant, who had been at the battle of Prestonpans, and there having mounted the horse of an English officer, whom he had brought down with his broadsword, chased for miles a body of Cope's recreant dragoons; the other, Hugh Chisholm, a Highlander, who had been also out in the '45, and lived in Edinburgh for a considerable period between 1780 and 1790. Sir Walter Scott saw him at that time, and says something regarding him in the 'Tales of a Grandfather.' The anecdote is this:

"'Hugh Chisholm, who had been associated with the Prince in his wanderings, was supported latterly by a pension, which was got up for him by some gentlemen. Lord Monboddo was much attached to this interesting old man, and once proposed to introduce him to his table at dinner, along with some friends of more exalted rank. On his mentioning the scheme to Mr. Colquhoun Grant, one of the proposed party, that gentleman started a number of objections, on the score that poor Chisholm would be embarrassed and uncomfortable in a scene so unusual to him, while some others would feel offended at having the company of a man of mean rank forced upon them. Monboddo heard all Mr. Grant's objections, and then assuming a lofty tone, exclaimed, "Let me remind you, Mr. Grant, Hugh Chisholm has been in better company than either yours or mine!" The conscience-struck Jacobite had not another word to say.

"'Chisholm was accordingly brought to Monboddo's table, where he behaved with all the native politeness of a Highlander, and gave

satisfaction to all present. He was very much struck with the appearance of Lord Monboddo's daughter, Miss Burnet—Burns's Miss Burnet*—who presided over the feast. He seemed, indeed, completely rapt in admiration of this singularly beautiful woman, insomuch that he seldom took his eyes off her the whole night. One of the company had the curiosity to ask what he thought of her, when he burst out with an exclamation in Gaelic, indicative of an uncommon degree of admiration, "She is the most beautiful living creature I ever saw in all my life."' "

STORY OF A FOUNDLING.

(Feb. 9, 1845.) "Miss Edmondstone, a lady of ninety, relates a curious story of a foundling. About eighty years ago, Mr. Gordon, of Ardoch, in Aberdeenshire—a tall castle situated upon a rock overlooking the sea—was one stormy night alarmed by the firing of a gun, apparently from a distressed vessel. Collecting his dependents, and furnishing himself with lights and ropes, he hurried down to the beach, amidst the peltings of one of the severest storms he had any recollection of. On arriving there, he and his people could discern no ship; they saw no light; they heard no cry. But, searching about, they found an infant lying in a kind of floating crib or cradle, as if it had been brought ashore from a perished vessel by the force of the winds and the waves. The young stranger was removed to the castle, and taken care of; and in the morning there were indubitable signs of a shipwreck on the beach, but no other person seemed to have got ashore.

"Mr. Gordon, unable to trace the history of the infant (it was a female), brought her up with his own daughters, and became as much attached to her as to any of his children. The foundling received, in all respects, the same treatment and the same education as the young ladies with whom she was associated, and in time she grew to woman's estate. About that time a similar storm occurred. Mr. Gordon hurried as usual to the shore; but this time was so happy as to receive a shipwrecked party, among whom was a gentleman passenger. After a comfortable night spent in the castle, this stranger was next morning surprised by the entrance of the young ladies, upon one of whom he fixed a gaze of the greatest interest.

"'Is this your daughter too?' said he to his kind host. 'No,' said Mr. Gordon; 'but she is as dear to me as if she were.' And then he related the story of the former storm, and of the discovery of the infant upon the beach. At the conclusion, the stranger said with much emotion that he had all reason to belive that young lady was his own niece. He then stated the circumstances of a sister's

* *Address to Edinburgh*, and *Elegy on the late Miss Burnet of Monboddo*. She died of consumption, 17th June, 1790.

return from India, corresponding to the time of the shipwreck; and explained how it might happen that Mr. Gordon's inquiries for the parents of the child had failed. 'She is now,' he said, 'an orphan; but her father has left her the bulk of his fortune, to be bestowed upon her, if she should ever be found.'

"All these things being fully substantiated by the stranger, it became necessary that the young lady should leave Ardoch, to put herself under the care of a new protector; but this was a bitter trial, and she could at last be reconciled to quit Ardoch only on the condition that one of her friends, the daughters of Mr. Gordon, should accompany her. This was consented to, and the whole party soon left Scotland to proceed to Göttenburg, in Sweeden, where her uncle carried on a large mercantile concern.

"There is no further romance in the tale as far as the young lady is concerned; for fact does not always go as fiction would. But a curious circumstance resulted, nevertheless, from the shipwreck. Miss Gordon was wooed and won at Göttenburg by a young Scottish merchant named Erskine, a son of Erskine of Cambo in Fife, a youth of narrow fortunes, and *seventeen* persons between him and the title and estates of the Earl of Kelly. The seventeen died, and this young man became an earl. More than this, a sister of Miss Gordon was, through the same connection of circumstances, married to a younger brother of the former, who succeeded to this title. Thus, through the accident of the shipwreck, two daughters of an Aberbeenshire laird became Countesses of Kelly. Unfortunately neither had any children; so that the title has reverted to the Earl of Mar, the representative of the family of which that of Kelly was a branch." [Since the preceding was written, the earldoms of Mar and Kelly have been disjoined, in consequence of the Earl of Mar and Kelly having died without issue, 1866, when the earldom of Mar passed to heirs-general, and the earldom of Kelly to heirs-male.]

VISIT TO MISS PORTER.

(July 4th.) "Accompanied Mrs. Hall to a house in Kensington Square, to be introduced to Miss Porter. Tall, thin old lady, reclining on a sofa. Weakly health. Above seventy. Kindly Scottish manners. We talked of her young days spent in Surgeon's Square, Edinburgh. Her mother occupied part of the long house on the south side of the square, the west half; Lady Henderson the other. Knew the Kerrs of Chatto as neighbors. Miss Porter, when a little girl, saw one day a thin, elderly gentleman, in a light-colored coat with a plaid, in the square. Went up to him, and said he was like her grandpapa, and for that reason asked him to come in. He followed her into the house, where she introduced him to her mother, as being so like grandpapa. He fell into conversation about the army, led to it by seeing the sword of Miss Porter's father over the fireplace.

He said he had also been a soldier; having fallen in love with his mother's waiting-maid, he had taken to that life in consequence of a quarrel with his friends. He had been at the battle of Culloden, and mention of this seemed greatly to affect him. By-and-by he went away. It should be mentioned that Miss Porter, on taking his hand at first, had observed it to be small, thin, and blue-veined like a lady's. A few days after, a young medical student, visiting Mrs. Porter's, mentioned the curious circumstance that an old gentleman had been run over by a wagon in the streets, had been carried to the infirmary, and was there found to be a female. It was afterwards learned that this singular person was the sister of a clergyman, a person of good connections, who had a slight craze, and believed himself to be Jeanie Cameron, of whom an untrue scandal had been reported. The injured female died in the infirmary.

"Miss Porter's brother, Robert, when a mere child, had been taken to drink tea with some of the rest of the family in a house where they met Flora Macdonald. A picture attracted his attention, and he showed a curiosity to see it nearer. Flora put him upon a chair to see it, told him it was the battle of Preston, and gave him some explanations about it. This, he used to acknowledge afterwards, was his first lesson in historical painting.

"Lady Anne Barnard told Miss Porter that she had written 'Auld Robin Gray,' in order to raise a little money for the succor of an old nurse, having no other means. She had heard from her music master, that so much as five pounds was sometimes got for a successful song, and she thought she would try. It was successful in the object. Lady Anne wrote much poetry besides, which is preserved by one of her relations." [The Miss Porter above referred to was Jane, authoress of "Thaddeus of Warsaw" and the "Scottish Chiefs." She died 1850.]

PLAYFULNESS OF ANIMALS.

(July 22d.) "It is well known that lambs hold regular sports apart from their dams, which only look on at a little distance to watch and perhaps enjoy the happiness of their offspring. Monkeys act in the same manner. Mr. Leigh Hunt, with whom I supped this evening, told me that he had observed a young spider sporting about its parent, running up to and away from it in a playful manner. He has likewise watched a kitten amusing itself by running along past its mother, to whom she always gave a little pat on the cheek as she passed. The older cat endured this tranquilly for awhile; but at length, becoming irritated by it, she took an opportunity to hit her offspring a blow on the side of the head, which sent the little creature spinning to the other side of the room, where she looked extremely puzzled at what had happened. An irritated human being would have acted in precisely the same manner."

ADAPTIVENESS.

(July 27th.) "There is a quality of human nature which may be called adaptiveness. Some persons readily adapt themselves to any new society into which they may be thrown; others not. When a man rises in the world, it is often found that his wife does not, can not rise with him. Sometimes this does not proceed solely from want of the intellect and taste requisite for the purpose, but from a kind of willfulness. Not feeling that new acquaintances attribute any peculiar merit to her, or pay her any particular attention, she affects to hold lightly the marks of approbation bestowed upon her husband, and takes a kind of pleasure in not favoring his advance. In some cases, the mere sense of awkwardness under the new circumstances may operate to the same effect. Women ought to consider it as a duty to adapt themselves, as far as they may, to their changed condition. A regard for the happiness of the husband and family demands it."

IGNORANCE OF NATURAL HISTORY.

"At the meeting of the British Association at Cambridge (June, 1845), Mr. Goadby, who had his beautiful anatomical preparations of the lower animals exhibited at the model-room, was greatly struck by the appearance of ignorance in the gownsmen, as shown in the remarks which they made and the questions they asked. One, who had a lady on his arm, told his fair companion that these were *models*. Another similarly attended, apparently wishing to avoid troublesome questions, said to her very oracularly, 'O, this is all anatomy.' A third collegian inquired who made those things. 'The glasses do you mean?' inquired Mr. Goadby. 'No; the things in the glasses.' 'The same that made you,' was the reply. Several men, better informed, spoke of the objects comprehensively as insects, though only a portion of them were of that class in the animal kingdom. None of these men had ever heard of such a thing as a mollusk or an echinoderm. Altogether, Mr. G. thinks he never before showed his preparations to a more ignorant set of visitors than the gownsmen of Cambridge.

"As an illustration of the benefit that might be derived from the introduction of natural history into schools, Mr. Goadby was once lecturing on his preparations at Cheltenham, when he had, among his other auditors, Lord M——, of the Irish peerage. Lord M—— is a middle-aged man, congenitally lame, insomuch that he is dependent on others for locomotion. Possessing an active mind, and forbidden to take the amusements of other men of his order, he has given his mind a good deal up to study, but not wholly, for the gaming-table had unfortunately asserted a strong claim over him, and he had thus lost the whole of his patrimonial property, reserving only a diminished income from some estates of his wife. This clever nobleman, whom

every body loved for his amiable dispositions, seemed exceedingly interested in the lecture, and after it was over, he lingered an hour, inspecting and inquiring into the peculiarities of the animals which formed the subject of it. At last, he burst out: 'If I had been taught such things in my youth, what it would have been for me!' implying that the having such an amusement for his leisure would have saved him from those wretched pursuits in which he had sought excitement, and which had proved his ruin."

SHYNESS AND MODESTY.

"Shyness is a curious peculiarity of some men, and the explanation of much that is dubious and obscure in their behavior. It often happens that a man gets the reputation of being haughty or unsocial, when he is only shy. An unconquerable bashfulness oppresses him. When such a man is drawn into company, participating in the excitement of the hour, and having got over all the difficulties of the first address, he generally comes out; often we find him talkative and entertaining, so that strangers go away, saying, 'Well, there is one of the pleasantest men I have met with.' Strange it is to meet the same man next day, and find him make an effort to avoid you. Lord M——, a person of this kind, always walks along the inner side of the pavement, with eyes bent on the ground, as if anxious to escape observing or being observed. The J. G. (Boyle), who is associated with him on duty every day for one half the year, has actually known Lord M——to cross to another side of the road on approaching him, and endeavor to escape his notice by pretending to take an interest in something on the other side of the hedge. Men, on the other hand, who get the reputation of being forward, are often merely men of strong animal spirits, these rendering them frank and bold in society, where, from their comparative rank, they are expected to be quiet and respectful.

"In some cases, shyness may arise from modesty, an unwillingness to intrude. Be this as it may, it is well to bear in mind that the world generally takes men at their own apparent estimate of themselves. Hence modest men never do attain the same consideration which bustling, forward men do. It has not time or patience to inquire rigidly, and it is partly imposed upon and carried away by the man who vigorously claims its regards. The world also never has two leading ideas about any man. There is always a remarkable unity in its conceptions of the characters of individuals. If a historical person has been cruel in a single degree, he is set down as cruel and nothing else, although he may have had many good qualities, all but equally conspicuous. If a literary man is industrious in a remarkable degree, the world speaks of him as only industrious, though he may also be very ingenious."

LACTATION.

"Can lactation have any affect in determining the moral character of infants? A friend of mine has a son who, on account of the death of his mother immediately after his birth, was given out to be nursed by a woman in humble life. This woman was afterwards found to be very worthless. The boy, who is now in his sixteenth year, has already been a source of great distress to his father, in consequence of strong traits of character destitute of probity. He can not be corrected by any kind of discipline out of a propensity to dissimulation. The strange thing about him is, that no sooner does he commit some gross offense than he expresses regret for what he has done, promises never to do the like again, and then all at once commits some fresh mischief, to be in turn repented of. As a last resource, he was sent to a school at Brussels; but he ran away from it in disgraceful circumstances, came to London, and entered the army as a private soldier. This, as usual, he said he was sorry for, and wished to be bought off. His father, however, said he would only do so on his rising, by good conduct, to be a corporal. So he went with his regiment to India." [There, as was afterwards learned, he died.] "My friend, the father of this unhappy youth, imputes his moral imperfections to lactation. He was, he thinks, vitiated by the milk of his nurse. And he says he is warranted in this notion by having heard of other instances of vitiation of character by similar means. It is worthy of remark that the boy was with his nurse only during the time of lactation.

"It does not seem unlikely that a child born of virtuous parents, and partaking of their organization, may partake of a corrupt element from a milk-nurse. The constitution of the new being in our species is not completed at birth, as it is in some of the lower animals. The lactation is a portion of the process of reproduction. That portion being conducted by a distinct parent of inferior moral character, may be the means of introducing a depravity where, originally, all was morally fair. In other words, we might say that at birth a child is not thoroughly quit of its mother. Nature designs the connection to subsist until the period of milk-nursing is past.

"In the 'Coltness Collections,' is a passage expressing the sentiments of the wife of Sir James Stewart, of Coltness, who was Lord Provost of Edinburgh in 1650. She strictly declined the offer of her husband to have her children sent out to hired wet-nurses, saying, 'she should never think her child wholly her own, when another discharged the most part of a mother's duty, and by wrong nourishment to her tender babe might induce wrong habits or noxious diseases.' She added: 'I have often seen children take more a strain of their nurse than their mother.'"

From desultory thoughts on secular subjects my brother seems to have latterly turned to literary exercises of a religious nature. It is impossible to say, definitely, on what he was for the last time occupied. I am inclined, however, to think that it was the catechism for the young, left unfinished. As throwing some light on his views regarding man's destiny, the following passages may appropriately conclude the present chapter. After a series of questions and answers regarding the Divine Government of the world, he comes to some of the duties imposed on human beings.

"*Ques.* Have you any special rules to assign for the guidance of men in this world?

"*Ans.* Yes; some rules may be set down which will form a guidance in the common run of circumstances.

"*Q.* How do you describe them?

"*A.* They may be wholly described as duties,—that is, observances and doings which we owe to our fellow-creatures.

"*Q.* Have we not also duties towards ourselves?

"*A.* Some duties are so called; but a duty is properly something owed, and in owing, another person is necessarily concerned. It can easily be shown, of all duties said to be owing to ourselves, that they are, more comprehensively, duties owing to society.

"*Q.* Will you first describe that class of duties?

"*A.* A man is required to cultivate a sense of dependence on, and responsibility to, God, the author and ruler of his being, the arbiter of his final destiny, because it is good for his spiritual nature to do so, and the better he is in this respect it is the better for society. He ought to study to preserve his self-respect, because without that he can bear little value towards his fellow-creatures. He is called on to cultivate the means of preserving his health, because, in sickness and infirmity, he is an encumbrance instead of a benefit to society. It is incumbent on him to practice diligence in his calling, and prudence in his household, because without these qualities in individuals society would be scarcely able to exist.

"*Q.* Do men not sometimes make mistakes as to what seems their duty?

"*A.* Yes; men sometimes entertain feelings of ambition, under a pretext of duty to themselves, with little or no regard to the good of the community. Such feelings, being only selfish, are detestable. On the other hand, to obtain wealth and power by fair means, and employ them generally towards others, is not merely justifiable, but laudable. The unfailing criterion in all such personal matters is, how do they affect our neighbors? If well, then we are doing right; if ill, then we are doing wrong. Where we only seek to make ourselves as good, wise, useful, as possible, we are certainly fulfilling the ends of God in society, and may claim approval of God and man.

"*Q.* Please now to describe the duties where a more direct reference is made to others.

"*A.* They are partly negative and partly positive. We are called on to abstain from injuring our neighbor, in his property, his health and life, his feelings, his good name, his rights of all kinds, and rather to promote his good in these respects. One most important duty is to practice upon him no deception by word or deed. Another, is to respect his right of forming his own opinions, without which he is marred in the exercise of that final judgment on right and wrong which has been set forth as the Divine voice speaking within him. We must also respect his right of employing his faculties in the way that seemeth to him best, consistently with the good of his fellow-creatures.

"*Q.* Does this view of duties apply also in the affairs of state?

"*A.* Undoubtedly. In political procedure, truth, rectitude, forbearance, and respect for rights are as much required as in ordinary society. And as no man can neglect or violate the simplest laws which bind him to his neighbor, without creating some degree of suffering, which is liable to react against himself, so it is certain that those in authority can not use it recklessly or oppressively without producing an unhappiness which will turn round to their own annoyance, injury, or destruction. There is, in short, but one rule of duty in the world, and that is summed in 'Love your Neighbor.' . . . The errors and delusions of mankind are unfortunately endless; and they are to be deplored, not only as occupying much time and thought uselessly, but as obscuring our ideas as to what is of real importance for the fulfillment of the Divine purposes of our being."

These may be considered to be among the last sentiments written by my brother.

HIS LAST DAYS, DEATH, AND CHARACTER.

The year 1870 opened gloomily in that pleasant-looking house at St. Andrews. After a short illness, and very unexpectedly, my brother's second wife died on the 18th January. Now was he again in a sense desolate. Yet though afflicted with this fresh calamity, and broken down in health, he did not repine. His bereavements only tended the more to bring out his true character. In him were now seen united the piety of the Christian with the philosophy of an ancient sage "I know," he said, "that my days are numbered. My time can not be long. I feel the gradual but sure indication of approaching dissolution. But don't let us be dismal about it; that would be alike futile and sinful." And so he spoke as one reconciled to his appointed destiny. Setting his affairs in order, he looked calmly on the advances of the destoyer. He had done his work, and we may be permitted to think that he had done it nobly.

Pale and feeble, he crept about, took short drives, and received visitors as usual; for bodily weakness did not in the least affect his spirits. With one of his married daughters, Mrs. Dowie, who had come to visit him, he walked to the Cathedral Burial-ground, and pointed out the spot where he wished to be interred. It was the interior of the old Church of St. Regulus. "There," said he, "I hope to have the honor of finding a resting-place; I should certainly be in excellent company, for Mr. Lyon, the historian of St. Andrews, told me there is a surprising number of bishops interred here." The desire to be buried in this place of historical note was what might have been looked for. The Church of St. Regulus is one of the most ancient ecclesiastical structures in Scotland. It dates from the twelfth century, and, as seen by its tall, square tower, is built in the Romanesque style. When the cathedral, a more modern and ornamental structure, was laid in ruin by a mob at the Reformation, this adjacent antique church was so far spared, that till this day it remains all, except the roof, in a state of good preservation. Carefully secured as crown property, it can not be called a part of the general cemetery; and interment within it requires the sanction of the chief commissioner of Her Majesty's Board of Works.

Being recommended change of scene, my brother accompanied Mrs. Dowie to her home at West Kirby, near Birkenhead; and thereafter, in April, went with her by way of Gloucester, to Torquay, where for a time he took up his abode. Here he felt a slight improvement of health, and was able, not only to attend and fully enjoy an interesting lecture by Mr. Pengelly on the discoveries in Kent's Cavern, but to visit the cave, and make remarks on the objects of natural history that had recently been brought to light. Before returning home, he once more visited Mrs. Priestley in London, and also his surviving sister, Mrs. Wills, at Sherrards, in Hertfordshire, where he greatly enjoyed the beauty of a quiet rural scene. Brightened up a little by these visits among relatives, he returned to Scotland, in the company of his youngest daughter, who describes the fervency of his emotion in crossing the Border and finding himself again in his native country. He got back to St. Andrews in June.

From this time, he did not leave home, where, to keep him company, he was visited, one after the other, by several of his daughters. I went to see him in August, and found him in a frail condition, though able to converse on literary and other topics. His most conspicuous ailment was want of appetite, along with a deadly paleness of countenance. So greatly was his system disorganized, that on sitting down to table, he could not eat. Nothing that he was solicited to take did him any good, farther than keeping up the spark of life. Still, in a way he joked and told stories, felt an interest in the stirring news concerning France, and continued to take delight in music.

Towards the conclusion of autumn, a change for the worse took place, and his mind was visibly weakened. Then came winter in more

than ordinary severity, with its deadly effects on the aged and invalid. Shortly after the beginning of 1871, he could no longer sit up, and for his accommodation, his study, adjoining the library, had been for some time fitted up as a bedroom. Here I found him in bed on the 27th January. He said he preferred to be in this apartment, for it was on a level with the sitting rooms, whence he could hear something of the lively conversation of his daughters, and where they could conveniently see him. A piano was placed in the library for his solacement.

Constantly attended by Dr. Oswald Bell, and by great care in nursing, he got through the winter. His married daughters now left him, not anticipating any immediate change. Day by day, however, he lost strength, and Mrs. Dowie was recalled. On her appearance, he said he was glad that she had come back to see the last of him. On Sunday, 12th March, he was able to listen to and heartily appreciate his favorite prayers and psalms in the Morning Service, ejaculating from time to time: "How true, how beautiful."

In a note to me, Mrs. Dowie gives a simple and touching account of the closing scene:

"On Wednesday, the 15th, he described himself as 'quite wordless,' and just pressing our hands, returned our embraces with fervor. He begged for some music, and was much gratified on my playing to him 'Macpherson's Farewell,' an air he greatly admired, and which in former years he used to play himself on the piano, with my accompaniment. Next day, he seemed very torpid, and scarcely spoke to us, more than answering questions. Early in the following morning, life was fleeting away. His last faintly uttered words were: 'Quite comfortable — quite happy — nothing more!' And so, with us sitting in silent tears beside him, at about five o'clock on Friday morning, the 17th March, he gently breathed his last."

At this mournful juncture, I had gone to London on account of the illness of my youngest brother, David, whose health had for some time been in a critical condition — partly the result of a fall from an omnibus, which left injurious effects on the system, and partly from distress at the death of his wife. He was now confined to bed, and in so delicate a state that intelligence of the death of Robert brought on a paroxysm, which terminated in his decease on the 21st March. Of the last painful scene I could not be a witness, for I was required at St. Andrews to assist at the funeral of my brother Robert.

This solemnity took place on the 22d; and to meet the wishes of many who expressed a wish to be present, the arrangements were more of a public character than had at first been intended. Service was performed over the body in the Episcopal chapel, by the incumbent, the Rev. L. Tuttiett; after which the procession of friends and relatives proceeded to the Church of St. Regulus, in the Cathedral Burying-ground, for interment, in which permission had been obligingly granted. On approaching the cemetery, the funeral procession

was met by the provost and magistrates of St. Andrews, also by members of the Senatus Academicus, with their official insignia. Surrounded by a large and sympathizing crowd, and with the last offices of the Church, the body of Robert Chambers was lowered into the grave, where it reposes amidst the dust of ecclesiastics whose names are now only known by the records of history.*

In his sermon on Sunday, 26th, the Rev. Mr. Tuttiett made some remarks on the deceased. A few passages may be quoted :

"A little more than a year ago, when first I came to minister in this church, there sat before me one to whom I could not but turn with especial interest at that time. He was, I knew, a man dear to many of his fellow-worshipers, dear to the place in which he lived, dear to his country, and to many far away. He was a man of high endowments, great and varied knowledge, deep philosophy, sound judgment, and refined taste. He was also, what is far better than all this, a man of upright and unostentatiously religious life ; noble and kind in his nature, gentle and modest in his manner, genial and warm in his sympathies, faithful in his friendships, and generous in his dealings. He had come from his recently bereaved home to seek comfort in the common prayers of the Christian Brotherhood with whom he delighted to worship. The text of the sermon he heard on that occasion was taken from St. Paul's address in the synagogue of Antioch : 'David, after he had served his own generation, by the will of God, fell on sleep, and was laid to his fathers.' Those words seem to have struck his mind most forcibly. I shall not forget with what earnestness and solemnity he afterwards commented upon them. They suggested, he thought, 'a sublime ideal of human life, and a comfortable view of decease.' Certainly he seems to have kept such an ideal before him. He 'served his own generation' in the way God marked out for him faithfully and well. Let me only remind you how much he has done, in conjunction with the brother who now survives him, for the dissemination of that pure, wholesome literature which, though not coming under the special denomination of religious, has very greatly served the cause of religion by humanizing and elevating the mind, and thus preparing it for the direct teaching of divine truth. Those who, like myself, have been much interested in the work of popular education in England, must ever honor his name for this service to the generation in which he lived. But my object is not so much to speak his praises as to gather out for myself and for you the instruction of his life and example. He was a great lover of Nature, and a patient, nor by any means an unsuccessful student of her works.

* He left the following family: Jane (Mrs. F. Lehmann); Robert Anne (Mrs. Dowie); Eliza (Mrs. Priestley); Amelia (Mrs. R. Lehmann); James; William; Phœbe (Mrs. Zeigler); and Alice. Mary (Mrs. Edwards) predeceased him, leaving three orphan children to his care.

And he was ever ready to encourage the investigations of every man whose heart was loyal to truth, even though the investigator might seem, in his better judgment, to be proceeding upon a wrong principle. But certainly, in his conversations with myself, he ever evinced the clearest recognition of a Personal God moving amidst his own creation, and ruling it constantly by his Word. . . . He seems to have had so great a reverence for the deep things of God, and so humbling a sense of his own inability to grapple with them, that he was ever most unwilling to converse about them. He was, I believe, a sincerely attached member of the Episcopal Church of Scotland. He venerated its old historic associations and traditions. He loved its sound and sober standards of faith and devotion. At the same time he very highly esteemed the ministers of the National Establishment; he did full justice to the good he knew in other communions; and he never counted men offenders for difference of opinion. . . He seemed to be a man of vigorous, manly intellect, sparing no labor, no self-devotion, in the acquirement of whatever knowledge he thought it good, for himself and for his fellow-creatures, to possess; and at the same time a man of pure, gentle, kind, and unselfish character, whom it was impossible to know and not to love."

Here terminates our Memoir. The principal subject of it had passed away in his sixty-ninth year, a victim, as it appeared to himself and his family, of that species of excessive literary labor which, by overtasking the nervous system, often proves so fatal. Of the esteem generally entertained for him in his private character, I do not propose to dilate. His genial and kindly disposition, to say nothing of his acquirements, gave him many friends. Never had children a more loving father. In public affairs he was not qualified to take a prominent part. At one time, as has been seen, he edited a newspaper in the old Conservative interest, but his politics were of a mild type; and latterly he was numbered among the friends of social progress within sound constitutional limits. His generosity in extending aid to the needy and deserving was a marked trait in his character. His tastes led him to be elected a Fellow of several learned Societies, and he was a member of the Athenæum Club. Diligent, accurate, and upright, he entertained clear views on all ordinary concerns; and no one could be more unscrupulous in his denunciation of whatever was narrow, mean, or dishonorable. If, in any of these respects, he sometimes cherished resentments that, founded on misconception and prejudice, had better have been forgotten, it is allowable to think that such failings might fairly be imputed to an overwrought susceptibility of temperament not common in the ordinary walks of life.

With regard to my brother's literary character and works, I shall not, having said so much already, attempt any elaborate estimate or analysis. His best services were devoted to his native country, and,

with the exception of his illustrious contemporary, Sir Walter Scott, no other author has done so much to illustrate its social state, its scenery, romantic historical incidents, and antiquities, the lives of its eminent men, and the changes in Scottish society and the condition of the people (especially those in the capital), during the last two centuries. His first work, the "Traditions of Edinburgh," evinced this strong bias and ruling passion of his mind. He was, as has been stated, assisted by Charles Kirkpatrick Sharpe and Sir Walter Scott, but the great bulk of the traditions and all their *setting* were his own. He knew every remarkable house, its possessors, and their genealogy; every wynd and close from the Castle-hill to Holyrood; and in describing these, he poured forth a vast amount of curious reading and information, much of which would have been lost but for the taste and diligence of so enthusiastic a collector. Perhaps this work will hereafter be considered the most unique and valuable of all his labors. His next production, however, has enjoyed a still greater share of popularity. I allude to the "History of the Rebellion of 1745–46," a work which was very carefully written; and the subject had a wide and deep interest. As latterly extended, by materials gathered from the "Lyon in Mourning,"* the book has taken its place among our standard works, as a faithful and animated narrative of one of the most striking and memorable periods in our national annals.

The other popular histories written between 1827 and 1830 are less original and less valuable than the narrative of the '45. The "Calendars of State Papers" were not then published, nor had antiquarian clubs and family repositories enriched our stores of historical knowledge with those minute and graphic details which add life, and spirit, and individuality to the pages of Macaulay and Froude. My brother's works are of the nature of memoirs. His object was to present a view or portraiture of the external circumstances of the period embraced—a series of military narratives—rather than to attempt "histories of the legitimate description, which should appeal only to the moral faculties of the select few." He anticipated Macaulay in desiring to make history interesting to the many, embracing details of the manners, customs, social habits, and daily life of the nation; and with all young readers, and generally with the middle and lower ranks of the Scottish people, he was eminently successful. Of a kindred character with these works was the "Popular Rhymes of Scotland," an amusing embodiment of folk-lore and mementoes of childhood descending from one generation to another in various countries of Europe.

By the establishment of *Chambers's Journal*, my brother was happily led into a new walk of literature. He came forward as a weekly

* This curious and valuable collection of manuscripts has been bequeathed to the Faculty of Advocates, Edinburgh, in grateful acknowledgment of the many benefits derived from their extensive library.

essayist. During fifteen years, as he has himself related, he labored in this field, "alternately gay, grave, sentimental, and philosophical," until not much fewer than four hundred separate papers proceeded from his pen. In these were best seen his imaginative faculties. His familiar and humorous sketches of Scottish life and character are allowed to be true to nature; they were certainly drawn from the life, and may be compared to the descriptions of Henry Mackenzie in the "Mirror" and "Lounger" as to discrimination and fidelity of portraiture. Many of my brother's essays are also on literary and antiquarian topics, and will be found not only honorable to his diligence as a self-directed and self-upheld student, but replete with correct, humane, and manly feeling. Essays or short disquisitions on scientific subjects were occasionally inserted in the *Journal*, for, as has been shown, my brother, latterly, devoted much time and study to geology and other departments of physical science; the result of which was the work on "Ancient Sea-margins," and a variety of papers communicated to the Royal Society of Edinburgh.

The patient investigation, long journeys, and careful accumulation of facts employed in establishing his geological theories, indicate the true scientific spirit and enthusiasm, and there can be little doubt that, had the circumstances of his early life been more favorable, he would have taken a high place among the men of science who have illustrated the nineteenth century. Considering that his education, as he frankly avows, never cost his parents so much as ten pounds, the wonder is that he did so much.

As regards his "Cyclopædia of English Literature," his "Life and Writings of Burns," his "Domestic Annals of Scotland," his "Book of Days," and the lesser works he produced, sufficient has perhaps been said in the course of this Memoir. On none of his later works did he look back with so much heartfelt pleasure and satisfaction, and none deserves greater praise, for its remarkable fidelity, than that concerning Robert Burns. Here, for the first time, the life of the poet, with all its lights and shades, was correctly delineated. The story of Highland Mary, and the dark days of Dumfries, were placed truly before the world, and allusions in the poems and letters were fully explained. Of all future editions of the Scottish poet, this explanatory and chronological one must form the basis.

Altogether, as nearly as can be reckoned, my brother produced upwards of seventy volumes, exclusively of detached papers which it would be impossible to enumerate. His whole writings had for their aim the good of society, the advancement in some shape or other of the true and beautiful. It will hardly be thought that I exceed the proper bounds of panegyric in stating, that in the long list of literary compositions of Robert Chambers, we see the zealous and successful student, the sagacious and benevolent citizen, and the devoted lover of his country.

HORACE GREELEY.

IN the great battle of life, the essential conditions of success are character and opportunity. The rarest qualities of manhood demand the influence of favorable circumstances for their true and complete development. But in certain cases, the lack of outward opportunity finds compensation in the superior force of inward endowment. The native power of character triumphs over every obstacle, and assures its possessor a distinguished and noble career. Of this truth, the subject of the present brief memoir affords a brilliant and impressive illustration. Horace Greeley is often spoken of as a remarkable type of the self-made man, but we shall here present him as a signal example of the supremacy of character over the want of opportunity. His career has been the spontaneous evolution of his inward nature, the inevitable product of the qualities of the man, which were exhibited in his earliest childhood, and gave promise of the success of his maturity, but received no friendly impulse from surrounding circumstances. No favorite of fortune, he has been the conqueror of fate.

Horace Greeley was born in Amherst, N. H., February 3, 1811. His father was a poor and hard-working farmer, struggling to support an increasing family, and burdened with a large debt incurred for the purchase of his farm. The soil of this farm was hard and rocky, consisting of a strong, gravelly loam, too cold and rough for the cultivation of wheat, but producing moderate crops of rye, oats, potatoes, Indian corn, and grass. The house in which Horace was born was a modest, unpainted structure of one story, standing upon a ledge of rock, half-way up a steep hill, and commanding an extensive view of the surrounding country. In the kitchen was the huge, old-fashioned country fire-place, which had devoured all the wood on the farm, and was still ravenous in its demands for more. There was an orchard of natural fruit, on the hill-side near the house, which bore a kind of sweet and spicy apple whose flavor is seldom equaled by the choicer productions that are now sold in the market.

The earliest experience of Horace was found in the severe labors

of the farm. He learned to work almost as soon as he could walk. His usual task, before he was five years old, was to ride the horse to plow before the oxen, in which pursuit there was sometimes a little peril. Occasionally, the plow would strike a fast stone, when the team was brought up all standing, and the tiny, white-headed rider would be thrown over the horse's head four or five feet in front. After the corn was ready for hoeing, he would precede his father in the furrows, dig open the hills, and kill the wire-worms and grubs that were forestalling the scanty harvest. In the frosty autumn mornings, he was called out at sunrise to watch the oxen, that were feeding on the thick, sweet grass beside the cornfield, while the men were at breakfast, before yoking up and driving the team afield.

Another occupation of the growing boy was to watch the pits for burning charcoal in the neighboring woods. The pit of green wood was often nine days in burning, and every pit must be watched night and day till the process was complete. The business was not without its peculiar fascinations. It was a pleasure to the young night-watcher and charcoal-burner to sit or lie on a mild, quiet evening, in a rude forest hut of logs three or four rods from the pit, with a bright fire burning between, telling funny stories, and beguiling the hours with a pleasant game of cards, checkers, or fox-and-geese, and perhaps a forage on some luckless water-melon patch in the vicinity.

Picking stones was, of course, an endless labor on the rocky New England farm. Every plowing turned up a fresh crop of bowlders and pebbles from the size of a hickory-nut to that of a tea-kettle. The work was to be done mainly in March or April, when the ground was saturated with ice-cold water, if not whitened with falling snow. The half-frozen fingers and toes of the diligent youngster soon made him regard this task with abhorrence, and with all his love for his native State, he can scarcely to this day forgive her for dividing her granite into such small fragments.

The annual gathering of hops, which at that time were cultivated to a considerable extent by the farmers in that part of New Hampshire, afforded an agreeable relief to the prevailing monotony of rural toil. It formed a sort of rustic carnival, a festive harvest-home, like the vintage in the south of France and Italy. The picking took place in the early part of September, and was chiefly performed by young women, the daughters of neighboring farmers, and the older children of both sexes. In stripping the hops from the poles, and storing them away in large bins, there was often an ardent rivalry among different groups. The work was pushed with intense excitement, and when completed, gave way to good cheer and social amusement. Mr. Greeley fondly dwells on these recreations of his boyish days as among the most enticing features of New England country life half a century ago.

In spite of his employment in the rugged labors of the farm, Hor-

ace, for many years, was a feeble and sickly child. He was often under medical treatment, and could not even watch the falling rain through a closed window, without an instant and violent attack of illness. On this account, as well as of the loss of two elder children, just before his birth, his mother was led to regard him with an exceptional affection and tenderness. She made him her companion and confidant as soon as he had learned to talk. Her rich store of ballads, stories, anecdotes, and traditions, was daily poured into his listening ears. He learned to read at her knee, longer ago than he can remember, although he faintly recollects her as she sat spinning at her little wheel, with the book in her lap, from which he had his daily lesson.

The mother of Horace Greeley was a woman of extraordinary natural endowments and character. She was tall, muscular, and well-formed in person, with the strength of a man without his coarseness, of overflowing animal spirits, delighting in hard work, of which she was abundantly capable, and of an exuberant good-will to every thing that lived. She was the life of the house, and the favorite of the whole neighborhood, especially of the children. An intense reader, she remembered whatever she read. Her industry was almost fabulous. Her activity was of a masculine type in its vigor and power of accomplishment. She worked out of doors as well as in doors, and was no less efficient in the hay-field than her husband. She hoed in the garden, she labored in the field, and while doing more than the work of an ordinary man and woman combined, would laugh and sing all day long, and tell stories all the evening.

When Horace was about two years old, he began to pore over the Bible, which was opened for his entertainment on the floor, and curiously scan the newspaper that was given him to play with. At three years of age, he could read any of the books prepared for children, and at four any book whatever. His third winter was spent at the house of his grandfather, in a neighboring town, where he attended a district school for the first time. The school-house, according to the rude fashion of the day, was a small building of one story, containing but one apartment, with two windows on each side. It had a small door on the gable-end that faced the road, and a low door-step before it. It was without the semblance of an ornament, not inclosed by a fence, nor shaded by a tree. There was nothing to protect it from the heat of the sun in summer, or the blast of the storm in winter. Its whole aspect was singularly forlorn and repulsive. The little school-room was built for about fifty pupils, and it could scarcely hold the chair and table of the teacher. Opposite the door was a vast fire-place, four or five feet wide, where a load of wood could burn in one prodigious fire. A low, slanting shelf along the sides of the room served for a desk to those who wrote, while the pupils were seated on inverted slabs, supported on sticks, and without backs. The school began at nine o'clock in the morning, and the

arrival of that hour was announced by the teacher rapping upon the window-frame with a ruler. The young folks of both sexes came tumbling in from their frolics in the snow. Among the pupils there might be a dozen grown-up young men and women. Not unfrequently, married men, and occasionally married women, attended school in the winter.

With the start that had been given him by his mother, Horace could not fail to make rapid progress in school. He was so eager in his attendance, that when the snow-drifts were too deep for him to wade through, one of his aunts would take him upon her shoulders and carry him to the door. He soon rose to the head of the first class in spelling; and it was no easy thing for a juvenile rival to remove him from the position. This was an accomplishment in which he especially excelled, and in the spelling-matches which were then in vogue, he usually bore away the palm, although only four years old. These matches took place in the evening when he could not keep his eyes open, and should have been in bed. It was often necessary to give him a sharp rap when it came his turn to spell the word, so that it was said he could spell as well asleep as awake.

The first book he ever owned was "The Columbian Orator," a medley of dialogues extracts from orations, sermons, and speeches in Parliament and Congress, with two or three versified themes for declamation. Among its contents was a famous piece,

> "You'd scarce expect one of my age
> To speak in public on the stage,"

which the young orator was so often dragged forward to recite, that he came to hate the very sound of it. He spoke in a soft, whining voice, with a lisping accent, but with perfect confidence in his own powers of elocution, and greatly to the amusement of the school.

At this time, Horace is described as an active, bright, and eager boy, but not fond of play, and seldom taking part in the sports of his companions. He was the pet of the school, though not a favorite play-fellow, and was liked by those whom he signally excelled as well as by the others. In some respects, he was very brave, but in others he exhibited a vein of timidity. He was never afraid in the dark, nor frightened by ghost stories. In speaking or reciting, he was always self-possessed, and did not hesitate to question the decision of his teacher, when he thought it was wrong, though never in a spirit of impertinence. But he could not stand up to a boy and fight. If attacked, he would neither return the blow nor run away, but bear it quietly. His ear was so sensitive that any loud noise, like the report of a gun, would almost throw him into fits. If a gun were about to be fired off, he would either run from the spot, or throw himself upon the ground and stuff grass into his ears. On the Fourth of July, when the people burned an immense quantity of gun-powder in honor

of the day, he would betake himself to the woods in order to escape the sound of the fire-arms.

Horace was in about his fourth year when he began the habit of insatiable reading, which has been one of his ruling tastes in every period of his life. He would lie under a tree on his back, completely absorbed in his book, often reading on, unmindful of dinner-time and sunset, as long as he could see. His delight in books led him, while yet a mere child, to resolve on being a printer. It is related that he went one day to a blacksmith's shop and watched the process of shoeing a horse with great eagerness. The blacksmith, seeing how intently he looked on, said to him, "You'd better come with me and learn the trade." "No," said Horace, very decidedly, "I've made up my mind to be a printer."

The passion for reading grew with the growth of his mind. His father's stock of books was very small. Besides the Bible and the Presbyterian Confession of Faith, his library amounted to scarcely twenty volumes. But he took a weekly newspaper from the neighboring village, the arrival of which was an occasion of intense excitement to the future editor. An hour before the post-rider was expected, Horace would walk down the road to meet him, and get the first sight of the precious sheet. As soon as it came into his hands, he would hurry off to some secluded spot, lie down on the grass, and greedily devour its contents.

He scoured the country round in search of books. When he had exhausted the scanty collections of the neighbors, he pursued the quest in the neighboring towns. It is said that there was not a book within seven miles of his father's house which he did not borrow. As soon as he was dressed in the morning he flew to his book. Every minute of the day which he could snatch from his work on the farm, and his studies in school, was devoted to reading. He was so absorbed in the pursuit, that when his parents wanted him, it was like rousing a heavy sleeper from his slumbers, to secure his attention. Even then, he clung to his book. He would read as he went to the cellar and cider-barrel, to the wood-pile or potato-patch, and having performed his errand, would take the book from his pocket, where it had been placed for the moment, and again fall to reading with a zest increased by the interruption. He even kept a supply of pine-knots, one of which he would light as soon as it was dark, and place on the back log in the kitchen fire-place, when, stretching himself at full length on the hearth, with his books piled upon the floor, he would be silent and motionless, and read all through the long winter evenings, without the slightest notice of what was going on around him. Visitors would come in, chat with the family, and go away, without attracting his attention, and entirely unaware of the presence of the quiet student before the fire. It was no easy matter to get him to bed. His father wished him to be up betimes, and, therefore, insisted on his going to bed early. He also feared that the boy would hurt his eyes, reading

for so many hours with his head in the fire by the flickering light of a pine-knot. Accordingly, by nine o'clock he would begin to rouse up the prostrate and dormant body and send the unwilling reader to bed. Even then Horace would not go to sleep before he had related to his younger brother what he had read, and recited the lessons of the next day for school. The only sport in which he loved to indulge was fishing, and this he followed for its utility rather than an amusement. He fished for the sake of fish, keeping his eye on the float, and never diverting his attention by talking with the other boys. The consequence was that he would catch more fish than all the rest of the party. For shooting he had no taste. If he sometimes went with a shooting-party, he would never carry a gun, and when the shot was fired he would lie down and stop his ears till the game was dispatched.

When Horace was about ten years old, an event occurred which changed the fortunes of the family. His father, although an honest, industrious, hard-working man, was never prosperous in his pecuniary affairs. He had no profit in carrying on his farm, and what with bad crops, frequent losses, and becoming security for a neighbor, he had fallen deeply in debt. At length his property was attached, and he was obliged to conceal himself through fear of arrest. The family remained in the old homestead while he took a journey on foot in quest of a new home. After working as a hired man for two or three months, he returned in due time, and on January 1st, 1821, started with his family for Westhaven, Vt., where he had hired a small house for sixteen dollars a year. The journey was made in a two-horse sleigh, in which were closely packed the father and mother, four children, and the little wordly gear that was left. They were three days upon the road, and after suffering intensely from the cold, arrived safely at their humble home in the north-west of Vermont. The family now made the acquaintance of genuine poverty—not beggary nor dependence, but the manly American sort. The sum total of their possessions scarcely amounted to two hundred dollars; but they never ran in debt, and were never in want, never without meal, meat, and wood, and very seldom without money. The father was glad to turn his hand to any work that he could find—chopping wood at half a dollar a day, gathering in the harvest, preparing the ground for a new crop, tending a saw-mill, and above all, clearing up wild land, piling and burning the trees after they had been cut down. After a time he began to keep cattle and sheep, and prospered in a small way. Working hard and spending little, he contrived to save some money, although it was a slow process.

He was assisted by all his family in whatever he undertook. There was not much to do at home, and after breakfast the house was left to take care of itself, while father, mother, boys, girls and oxen went off to work. The father chopped the large logs, and directed the labor of the whole company. Horace drove the team, but none too

well, and was gradually supplanted in the office by his younger brother. Each of the boys could chop the smaller trees. The mother and sisters gathered the light wood into heaps. When the great logs had to be rolled upon one another, it took the strength and skill of all the little group. There was no complaining, with all this severe labor. The cheerful spirit of the mother made perpetual sunshine even in the gloom of the forest. Her merry song and laughter rose from the tangled brushwood in which she was often buried. No severity of labor could disturb the harmony and good humor that prevailed in the family. At night they would return to their frugal supper of bean porridge, which was served in primitive style. A large milk-pan was placed on the floor filled with the savory viand, and the children helped themselves from the common dish without plate or bowl.

Their clothing was naturally of the homeliest material. It consisted chiefly of the coarsest kind of homespun linen, or linsey woolsey, dyed with butternut bark, and made up into the rudest garments by the mother. Horace seldom wore more than three garments at the same time in the summer season. A ragged straw hat, a torn shirt, never buttoned, and a pair of coarse trowsers, very short in the legs, composed his wardrobe. A pair of shoes and stockings and a jacket were added in winter. In the evening nothing could tempt him from his books. The rough house was a favorite resort for the children of the neighborhood. They were fond of listening to his mother's songs and stories, and of playing with his brothers and sisters. Horace did not mind their noise and romping, but would never join in their active sports. The only amusement which could tempt him from his books was a game of checkers, of which he became extravagantly fond. Nobody in the neighborhood could beat him. He gained so much skill before he was fully grown up, that there were few players in the country round who could win of him two games in three.

Throughout his boyhood Horace was always busy at something, when he had left his book for a short time. Like most of the Yankee race, he loved to trade. He would save up a hoard of nuts, and exchange them at the store for the little knickknacks which had excited his fancy. A bundle of pitch-pine roots, which he would take to the store on his back and sell for kindling wood, was a favorite investment. He had a great passion for bee-hunting, and would often gather an immense quantity of wild honey, which he knew how to sell at a good price. In this way he managed always to have a little money. When a peddler came along with books in his wagon, Horace was sure to be one of his best customers.

His reading took a wide range. Before he was fifteen he had devoured an incredible number of books. He had read the whole Bible before he was six years old. In his eighth year he read the Arabian Nights with intense pleasure; Robinson Crusoe in his ninth;

Shakespeare in his eleventh; and by the time he was old enough to be an apprentice he had dispatched most of the common histories, ancient and modern, and all the novels and romances that he could procure for love or money.

Horace was still a boy when he adopted the rigid temperance principles, of which he has been a strenuous advocate in his subsequent career. He was only thirteen years old when he made the deliberate resolve never to drink distilled liquors. At that time whisky and tobacco were the universal luxuries in Vermont. There was no entertainment of relatives and friends, scarcely a casual gathering of two or three neighbors for a social chat, without strong drink. During the childhood of Horace, in New Hampshire, cider was the universal beverage. In many a family of six or eight persons a barrel would hardly hold out for a week. The transition to a more potent stimulant was easy and natural. Rum was provided at all seasons and on all occasions. No house or barn was raised without a bountiful supply. A wedding without toddy, flip, sling, or punch would have been deemed a mean affair, even in the poorest families, while those who were well off dispensed wine, brandy, and gin in profusion, as a matter of course. Horace's determination not to drink was at first mentioned only at the family fireside. But it soon leaked out among the neighbors, some of whom took it in high dudgeon. At the annual sheep-washing, in the following June, it was talked about and condemned. It was decided that the young Nazarene should comply with the customs of the place. He was required to take a glass of liquor, and, upon his refusal, he was held by two or three of his young companions, older and stronger than himself, while the liquor was turned into his mouth, and a part of it forced down his throat.

The religious creed to which Horace Greeley has adhered through life was adopted at an early age, illustrating the saying of the poet that "the child is father of the man." His parents accepted the orthodox faith of New England — the father inheriting a partiality for the Baptists, while his mother was inclined toward the Presbyterians. Neither of them was a member of the church, nor had a character for extreme devotion. The father, however, was strict in certain observances. He would not allow novels or plays to be read in the house on Sunday. When they lived near a church the family attended it regularly, Horace among the rest. Sometimes on Sunday the father would require the children to read a certain number of chapters in the Bible. The religious education of the boy was, accordingly, free from a strong sectarian influence, but doubtless leaning toward the prevalent orthodoxy of the day. Yet, from the age of twelve, he began to doubt the doctrine of eternal punishment, and within a year or two from that time, was fully grounded in the faith of the Universalists, although he never entered a Universalist church till he was twenty years old.

The desire to become a printer, which was cherished by Horace from his childhood, has already been spoken of. When he was but eleven years old, hearing that an apprentice was wanted in the newspaper office at Whitehall, he applied for the situation, with the consent of his father, but was at once rejected on account of his tender age. He went home downcast and sorrowful. It was not until four years afterward that another opportunity was presented. In the spring of 1826, an apprentice was advertised for by the publishers of a weekly newspaper in East Poultney, a rural village in Vermont, about twelve miles distant from the family home. His father was about to remove to the West, and no longer had need of his services. He cheerfully consented to the wishes of Horace, who walked over to Poultney, made an agreement with the publishers, and a few days afterward engaged in their employ. He took his place at the font as though "to the manner born," and after a few words of instruction from the foreman, addressed himself to his new task. He needed no further assistance. He had thought of his chosen vocation for so many years that he seemed to comprehend the mysteries of the craft intuitively. All he had to acquire was manual dexterity. He worked on in perfect silence, hour after hour, through the day. When he left the office at night he could set type better than many an apprentice who had been in practice for a month. The next day he worked with the same silence and intensity, and so on for several days, until he acquired the respect of his companions, who at first had been disposed to make fun of the green hand.

In his new situation Horace found unwonted opportunities for the attainment of knowledge and the exercise of his faculties. The editor of the paper was a man of good education and kindly feelings. With him the young aspirant often engaged in friendly debate. Historical, political and religious questions were fully and earnestly discussed. Horace proved to be so thoroughly master of the situation, that his more experienced rival was often at fault. The town library gave him access to books; he still read during all his leisure hours; became a frequent talker in the village lyceum; and often wrote dissertations on subjects of interest. Though modest and retiring in his manners, he would sometimes engage in discussion with the ablest village politicians, who never left the field without a profound impression of the soundness of his views and the accuracy of his statements.

He now gained his first experience in original composition. He began, not indeed to write, but to compose paragraphs for the paper as he stood at the desk, and to put them in type as he composed them. He had joined a debating society during the first winter of his residence in Poultney, and soon became one of its leading members. Whenever he was appointed to speak or read an essay, he never wanted to be excused, but was always ready. He would stick to his opinion against all opposition, replying with the most perfect assurance to men of high station and of low. His wonderful memory gave him

a great advantage over his opponents. He never forgot the minutest details of important events, and could draw upon his reading for facts with full confidence in the exactness of his impressions. He was never treated as a boy by his fellow-members of the society, but as a man and an equal. His opinions were regarded with as much deference as those of the judge or the sheriff.

Horace was always a fluent and interesting speaker, although he made no pretensions to the graces of oratory. He gained not a little power in debate by his pertinent appeals to facts that had been lost sight of, or by the correction of a false quotation. He never lost his temper, and always retained the good will even of his adversaries by his evident earnestness and sincerity.

The father of Mr. Greeley, meantime, had taken up his residence in Erie County, Pennsylvania, where he had purchased some wild land which he was laboring to convert into a farm. He was aided in his struggles by the filial devotion of his son. Horace spent not a dollar of his scanty stipend on superfluities, but religiously devoted to his father whatever could be saved by the most rigid economy. His dress while at work in summer was only a shirt and trowsers. In his walks about the village, he added a cheap straw hat to this simple costume; but, even in winter, did not indulge in the luxury of an overcoat. The boys in the neighborhood often laughed at him for his homely dress.

During his residence at Poultney he twice visited his parents in Pennsylvania, a distance of six hundred miles, walking a great part of the way, and performing the rest of the journey by a slow canal-boat. He found the days of steady, solitary walking most favorable to quiet meditation. A walk of two or three hundred miles in the clear, calm autumnal weather was a luxury. On approaching his father's forest-home, it was just at dusk, and he lost his way in the woods. He remained over night in the cabin of a settler. It consisted of a single room; the logs of which it was built were still so green that the fire was made close to one side on the bare earth, with no fire-place and no chimney, but a hole through the bark-covered roof. His father's dwelling was of the same description. It was in the midst of the primeval wilderness. The giant timber yielded slowly to the ax. The crops were precarious and scanty, ravaged by myriads of pigeons and all manner of four-footed beasts, while the family of the pioneer were doomed to an almost desperate struggle for existence. The mother of Horace could never become reconciled to this rude way of life. The shadow of the great woods oppressed her from the hour she first entered them; the old smile departed from her face, she lost the familiar gladness of her manner; and though she lived to the age of sixty-eight, for many years, she had been worn out by hard work, and broken down both in body and mind.

While an apprentice at East Poultney, Horace boarded for some time at the village tavern. It was kept by a worthy, old-fashioned

couple, who became greatly attached to their singular guest, and he to them. As they give their recollections of his habits in the family, he was rather fond of good living, and ate and drank whatever was set before him with a healthy appetite. He was very fond of coffee, but cared little for tea. He stood for no ceremony at the table, but fell to without waiting to be asked or helped, and stopped as suddenly as he had begun. Nothing could tempt him to touch a drop of strong drink. When any topic of interest was started at the table, he joined in the discussion with great confidence, and maintained his opinion against all the talkers, with remarkable vivacity, but in perfect good temper. He came at length to be regarded as a sort of living cyclopædia, and was referred to as a final authority whenever there was a dispute. He never went to a social party of any kind, never joined his acquaintance on an excursion, never slept away from home, nor was absent from a meal as long as he lived at the tavern, except when he went to visit his parents. He seldom went to church, and usually spent the Sunday in reading. His religious and political opinions were already fixed. He was a decided Universalist, a staunch whig, and a zealous anti-mason.

After serving an apprenticeship of four years in the printing office at East Poultney, he had become master of the trade, and rendered important assistance in editing the newspaper. The little establishment, however, proved unsuccessful. It had changed proprietors several times, but none of them could make it prosper. At length it was decided to abandon the enterprise, and the paper was discontinued in the month of June, 1830. Young Greeley was now in his twentieth year; the world was all before him, and he was free to take any course that he might judge fit.

His first step was to visit his parents in their remote home. At that time the journey required about twelve days. It was accomplished, as on previous occasions, partly on foot and partly by canal-boat. He arrived at the house in the wilderness late in the evening. He found his father and brother completely transformed into back-woodsmen. Their log cabin stood in the midst of a narrow clearing, covered with blackened stumps and smoked with burning timber. Dark forests, almost unbroken, abounding in wolves and other wild beasts, extended a day's journey in every direction. The country was so full of game that a hunter would sell a deer before it was shot, appointing a day for the purchaser to call for the venison. The howling of wolves could be heard at the house as they roamed about in search of the sheep, which the emigrant vainly attempted to rear in the wilderness. Horace remained at home for several weeks, helping his father in his work, fishing occasionally, and nursing a lameness, under the care of his mother, which he had contracted in Vermont. He then took a start towards the East in search of employment as a printer. He found work in several places, but the pay was poor, and he was not tempted to make a permanent engagement. As a last resort, he went

to Erie, at that time a town of five thousand inhabitants, and with extensive trade on the lake and in the interior. After some delay in the early part of 1831, he obtained a situation in the office of the *Erie Gazette*, and was soon in high favor with his employers and fellow workmen. He was considered a remarkably correct compositor, though not a rapid one, but his steady devotion to his work enabled him to accomplish more than faster hands. He was soon employed as a regular journeyman, at the usual wages of fifteen dollars a month and board. All the intervals of labor were spent in reading. More and more he became absorbed in politics. He could tell the name and post-office address of every member of Congress, with something of his political character and history. He recalled the details of every important election that had occurred within his memory, even, in some instances, to the county majorities.

Mr. Greeley remained in this position about seven months, never losing a day's work, living with the most rigid economy, and devoting the greater part of his modest earnings to the aid of his father, who was struggling for the support of his family in the wilderness. He retained only twenty-five dollars of his wages for himself, and with this sum in his pocket, he determined to seek his fortune in a wider sphere. After a short visit at home, he tied up his scanty stock of clothing in a bundle, and set his face toward the city of New York. The summer was now at its height. The roads were choked up with dust, and the weather was intensely hot. He started on foot, intending to pay a visit to a friend, who lived about forty miles west of Rochester. On the journey he was almost parched with thirst, and the hard water of that region, which he was compelled to drink abundantly, seemed before night to cover his mouth and throat with scales, and made him long for a draught from the sweet wells or springs of New England.

He remained with his friend about twenty-four hours, and then walked down to the Erie canal to wait for a boat. Night came on, with no appearance of any boat, and after lingering until nearly midnight, the young traveler started on the tow-path, and walked through the darkness about fifteen miles to Brockport. He narrowly escaped being swept into the canal by the tow-line of the boats going west; but towards morning he was overtaken by a boat, in the right direction, and gladly went on board. The passage to Albany took nearly three days, and losing the regular morning boat for New York he engaged a berth in a tow-boat, and in twenty hours gained his first view of the great metropolis. This was just at sunrise on the morning of Friday, August 17th, 1831. His stock of cash was now reduced to ten dollars, and all the rest of his personal property was in the pocket-handkerchief in which he carried his summer clothes. He had no friend nor acquaintance in the vast city. He had not even a letter of introduction, nor a certificate of his skill as a printer. His decidedly rustic manner and address were not in his favor. His

general appearance was not prepossessing to strangers, and he had none of the arts with which so many are accustomed to push their way in a new position. A keen observer might indeed have detected signs of promise in the overgrown boy who stood before him in his round jacket, and received a favorable impression from the noble contour of his brow and the youthful beauty of his face. But to most persons, nothing was apparent but an unmistakable air of rural verdancy and an ignorance of the ways of the world, which could not but be looked upon with a certain degree of suspicion.

The first business of the new-comer was to find a cheap boarding-house. For this purpose he sallied up Broad street, and near the corner of Wall spied out a second-rate tavern, which seemed to him suitable to his slender finances. Upon inquiring the price of board at the bar, he was dismayed at finding it not less than six dollars a week, and at once set out on a new quest. He now wandered into West street, along the wharves of the North River, a quarter of the city more remarkable for bustle and noise than for refinement and elegance, and soon found a house of humble pretensions, on which the sign of "boarding" attracted his notice. It was indeed a squalid edifice, but the cheapness of its entertainment made up for the deficiency of its accommodations. The price of room and board was only $2.50 a week; Horace eagerly accepted the terms, and was soon seated at the breakfast table in the bosom of the family. As it was Friday, no meat was provided by the Roman Catholic host, an arrangement at which the new inmate of the household was not disposed to demur; but when Sunday evening was celebrated by general card-playing among the guests, his rustic traditions received a violent shock.

After his frugal breakfast of salt-fish and potatoes, he strolled out in pursuit of work. In his ignorance of the city, he traversed many streets in which a printing office could by no possibility be found. During that day and the next, however, he discovered the favorite haunts of the craft, and visited fully two thirds of them without the faintest gleam of success. Among other places, he called at the *Journal of Commerce* office, when the editor of the paper—the late distinguished David Hale—after coolly surveying his person from head to foot, pronounced him a runaway apprentice from the country, and advised him to go home to his master.

He passed the week walking many weary miles in this fruitless search, and returned to his lodgings on Saturday evening, thoroughly disgusted with New York. He resolved to shake off its dust from his feet the next Monday morning, while he could still make his escape with a pittance of money in his pocket.

Still, his desolate prospects did not cloud the cheerful sunshine of his Sunday's rest. He arose in the morning, refreshed in spirit and alert in purpose, and, according to his usual habit, went to church twice. In the morning, he induced a man who lived in the house to

accompany him to a small Universalist church, nearly three miles off, and in the evening, for the first time, he found his way to a Unitarian church, in which he was delighted to hear an eloquent exposition of the religious views which he had cherished from his earliest boyhood.

On returning from church in the forenoon, he met with several young Irishmen, who had called at the house in their saunterings about town, who, on hearing that he was a printer-lad in pursuit of work, became interested in his behalf with the spontaneous kindness that is natural to their race. One of them gave him directions to a place where he knew that journeymen printers were wanted, and advised him to make application without delay.

He went to the office early the next morning, and at once found employment. The work was of a complicated and difficult character. It was the composition of a very small New Testament, in double columns. The text was thickly strewn with references by Greek and other letters to the notes, which, with the numerous italics and the diminutive type, required all the skill of an accomplished workman. The young printer had never before encountered such a curiously intricate piece of typography. Several men had tried their hand at it and had given it up after a few hours. Greeley worked steadily through the day in perfect silence, and on presenting his proofs to the foreman at night, they were found greater in amount and more correct in composition than had previously been the case in the progress of the work. He was now constantly employed upon it, working from twelve to fourteen hours a day, and earning not more than six dollars a week. He was often at his case before six in the morning, and often remained till nine in the evening—the first to begin and the last to leave. No one but him worked before breakfast or after tea. His original and vigorous character soon made a strong impression upon his fellow-workmen. He had the habit of talking freely while at work. Politics, religion, and all the exciting questions of the day became the topics of earnest discussion. His conversation was vehement and positive. He maintained his opinions with unwavering confidence, which in one of a less genial temperament, might have been regarded as arrogance. His good humor, indeed, became a proverb among his companions. He was the most obliging man in the office. He was always willing to lend his money, and, with his saving habits, always had money to lend.

The work at length became slack in the establishment in which he was first employed, and in the month of November, 1831, he was compelled to discontinue his engagement. He found a situation in various printing-offices, however, as a journeyman until the end of 1832, when an opportunity was presented to him for going into business on his own account, and, commencing his journalistic career in which he has since attained such signal pre-eminence.

Among the acquaintances which Mr. Greeley had made in various

New York printing-offices, was a young man named Francis Story, for whom he had conceived a warm and devoted attachment. Story, who was only a little older than himself, and with scarcely a hundred dollars of capital, had made up his mind to start a printing establishment on a small scale, and offered his young comrade a share in the enterprise. He relied on the patronage of a prominent broker and dealer in lottery tickets, who issued a weekly *Bank Note Reporter*, devoted in a great measure to advertising his own business. The printing of this paper was offered to the new firm. Story was also intimate with a young medical student of the name of Shepard, who had set his heart upon the publication of a cheap daily newspaper, to be sold about the streets for a single penny. This person was desirous to secure the co-operation of Story in the intended project. The latter laid the plan before Mr. Greeley, but he hesitated about engaging in the enterprise. His means had been reduced to a small sum, as he had devoted most of his savings to the aid of his father in his struggle with the wilderness. But his scruples were at length removed by the ardent enthusiasm of his friend. A partnership was formed, materials purchased on credit, and the miniature office was opened in due form. In spite of the awkward, bashful ways of Horace Greeley, which gave no promise of pecuniary success, one of the oldest and wealthiest type-founders in New York furnished him with the requisite outfit, on no security but his personal obligation. It is a curious circumstance that this purchase of less than fifty dollars has since secured to the worthy type-founder the sale of more than $50,000 worth of type, by giving him the custom of the *Tribune*.

The proposed journal, called the *Morning Post*, was issued on the first of January, 1833, but was sold at the price of two cents instead of one. It was a bitter cold day, and a furious snow-storm was raging in the streets. There were few persons abroad, the newsboys became discouraged, and the new paper found but a scanty sale. During the first week there was scarcely sufficient demand to pay the expenses. The sales diminished every day, and before the middle of the third week the *Morning Post* had come to an end. The proprietor had few qualifications for his task. He was neither a writer nor a man of affairs. As he was totally ignorant of the details of editorship, the work of preparing the numbers devolved chiefly on Mr. Greeley, and they were brought out under almost every possible disadvantage.

In spite of the failure of the paper, the firm went on without serious embarrassment. Its principal reliance was the *Bank Note Reporter*, which afforded a small but regular income to the establishment. A certain amount of lottery printing was added to the business, by the managers of the State lotteries, and Mr. Greeley's practical dexterity was called into constant requisition by the setting up and arranging of the list of prizes and schemes of drawings. An article

in favor of licensing lotteries by the State, which he wrote at this time, attracted considerable attention, though he soon after changed his opinions on the subject, and became a strenuous advocate of their suppression by law.

Meantime, he met with a severe loss in the death of his partner, Mr. Story, who was drowned while bathing in the East River, July 9, 1833. His place in the firm was supplied by Mr. Jonas Winchester; the business continued to prosper, and the dream of editorship revived in the heart of Horace Greeley. In the ensuing spring, the plan of a family newspaper was formed, and on the 22d of March, 1834, the first number of the *New Yorker* was issued, without any previous sound of trumpets to announce its coming. This was a large, handsome weekly folio, afterward changed to a double quarto, mainly devoted to the literature of the day, but giving a regular digest of important news, including a summary of election returns and other political intelligence. The editing of this sheet devolved almost exclusively on Mr. Greeley. It was issued under his immediate supervision. The leading articles were written, and the selections made, for the most part, by his own hand, during the seven years and a half in which it continued to be published. The *New Yorker*, at that time, is pronounced by eminent authority to have been the best newspaper of its kind ever published in this country. It took no side in politics, though the editor could not always conceal his ardent convictions. The tone of the paper, though firm and decided, was gentle and modest. It made the editor known throughout the Union, and gained him hosts of friends. But the journal never became a source of pecuniary profit. Its circulation was large for that day; but it was conducted on the credit system, and its proceeds were swallowed up in bad debts. During the greater part of its existence, it afforded no support to the editor, who was compelled to find the means of living from some other source. It at last became necessary to suspend its publication, which was never afterwards resumed. This took place in September, 1841, about five months after the establishment of the *Tribune*. Mr. Greeley provided for the reimbursement of the subscribers who had paid in advance, while more than $10,000 of outstanding debts appeared in its books.

In 1838, while still engaged in conducting the New Yorker, Mr. Greeley undertook the editorial charge of the *Jeffersonian*, a political weekly newspaper, devoted to the interests of the Whig party, and published in the city of Albany. Although intended as a campaign paper for the New York State elections of that year, its tone was moderate and conciliatory. It abstained from vehement personal abuse in its treatment of opponents, rarely evincing a partisan spirit, and never bitterness of temper. The *Jeffersonian*, according to its original plan, continued in existence but one year, and in May, 1840, the *Log Cabin* was established in the interest of General Harrison, the Whig candidate for President of the United States. The man-

agement of this journal devolved upon Mr. Greeley, under whose skillful editorship it soon gained a large circulation and an unexampled degree of popularity. It established the reputation of the editor as a writer of signal courage and ability, a wise and sagacious politician, and a man of large humanity and rare firmness and elevation of moral principle. After a career of about eighteen months, the Log Cabin was finally merged in the *Tribune*, the celebrated daily journal, with which Mr. Greeley's name is completely identified, and for which all his previous newspaper enterprises had served as an admirable preparation.

The first number of the *New York Tribune* was issued on the 10th of April, 1841. It was a day of gloomy omens. The weather was unseasonably chilly, with a storm of sleet and snow, and the funeral ceremonies of President Harrison, whose sudden death had taken place six days before, enhanced the sombre character of the scene. The prospects of the new journal seemed to be in accordance with the cheerless aspect of the day. It had no presses, no capital, no ample staff of assistants, no troops of friends to bear it up with their good wishes or substantial aid. Of the first number, five thousand copies were printed, with a list of five hundred subscribers, and most of them which would not sell were given away. For the first week, the current expenses far exceeded the income, nor was the paper established on a sound financial basis, until the accession of Mr. Thomas McElrath as a partner, who undertook the sole charge of the publishing department. From that time, the course of the *Tribune* has been one of constantly increasing prosperity. It has possessed an exhaustless source of vitality in the character of its editor, and in return has crowned his name with the brilliant reputation that has made him a man of mark among the celebrities of the age. His position in regard to the journal for which he cherishes the affection of a parent for his child is best described in his own words: "Fame is a vapor; popularity an accident; riches take wings; the only earthly certainty is oblivion; no man can foresee what a day may bring forth; while those who cheer to-day will often curse to-morrow; and yet I cherish the hope that the journal I projected and established will live and flourish long after I shall have moldered into forgotten dust, being guided by a larger wisdom, a more unerring sagacity to discern the right, though not by a more unfaltering readiness to embrace and defend it at whatever personal cost; and that the stone which covers my ashes may bear to future ages the still intelligible inscription, 'Founder of the *New York Tribune*.'"

The peculiar opinions, and even the personal idiosyncrasies of Mr. Greeley, have found their most expressive illustration in the columns of that journal. He has been prominent as an advocate of the most rigid forms of temperance in eating and drinking. At an early age, as we have seen, he foreswore the use of all intoxicating liquors, and has ever since remained faithful to the pledge. Nor has he been

lukewarm in enforcing his own example upon the adoption of others. In 1832 he became a partial convert to the views of Sylvester Graham, a popular lecturer on dietetics, who maintained that the people of the United States were in the habit of taking too concentrated food. Mr. Greeley never went so far as to discontinue the use of meat, although he believes that a superior diet might be found in sound, unbolted grain, ripe and fresh fruits, and a variety of vegetables, with a moderate use of milk, butter and cheese, and but little of spices or condiments.

Another conspicuous movement which engaged the attention of Mr. Greeley, and which has been from time to time defended in the columns of the *Tribune*, is the plan for improving the condition of the laboring classes by the better organization of industry. Mr. Greeley believes in the adequacy of capital to supply employment, and, hence, that in a true society there need be no able-bodied paupers. In his opinion, the productive power of labor is greatly diminished by a radical defect in our present social arrangements. The different classes are in a state of antagonism with each other, and the consequence is what may be called a condition of social anarchy. The energies of men are wasted in providing safeguards against roguery and crime. Labor loses much of its effect by bad management, imperfect implements, and the want of the most powerful machinery. There is also great waste in consumption. It takes a thousand fires and a thousand cooks to prepare the food of a village, when a dozen fires and a hundred cooks would do it far better in a scientific combination of families. Mr. Greeley argues, moreover, that every child should be trained to skill in productive industry, as well as in letters and science. He should be made familiar with the action of machinery and the processes of the useful arts. These ends, he believes, can be best attained in a well organized association, and not in the present methods of isolated industry. While, therefore, the *Tribune* has been devoted to the support of social and industrial co-operation, it has lent no countenance to the theories of communism, or any plan of social reform in which the individual is lost in the supremacy of the mass.

On the subject of slavery, Mr. Greeley, from his earliest boyhood, shared in the sentiment which prompted the memorable utterance of President Lincoln: "I am naturally anti-slavery. If slavery is not wrong, then nothing is wrong. I can not remember when I did not so think and feel." When only a child of seven to ten years of age, he eagerly devoured every thing he could find on the progress of the great Missouri struggle, and intensely sympathized with the North in her effort to prevent the admission of Missouri as a slave State. At the commencement of the Abolition movement, however, he took no part with the agitators. He could not perceive the tendency of their efforts towards the achievement of their end. Hence, he never became a member of an Abolition society, and rarely found time to

attend an Abolition meeting. Warmly devoted to the Whig party, he deprecated the effect of the Abolition movement in politics, persuaded that it would weaken the only great national organization which presented the prospect of resistance to the aggressions of the slave power. It was not until after the defeat of Henry Clay, as a candidate for the presidency, of whom Mr. Greeley had been a most enthusiastic and effective advocate, and the election of Polk and Dallas, in 1844, that the *Tribune* engaged in the anti-slavery warfare. Its position was clearly explained in the language of the editor: "When we find the Union on the brink of a most unjust and rapacious war, instigated wholly (as is officially proclaimed) by a determination to uphold and fortify slavery, then we do not see how it can longer be rationally disputed that the North has much, very much, to do with slavery. If we may be drawn into fight for it, it would be hard, indeed, that we should not be allowed to talk of it." But the limits of this brief sketch forbid us dwelling at greater length on the political career of Mr. Greeley, and we resume the personal narrative as of greater interest to the readers for whom the present volume is chiefly intended.

In the month of April, 1851, Mr. Greeley made a short visit in Europe, for the purpose mainly of attending the World's Fair, in the Crystal Palace. He arrived in Liverpool, after an intensely disagreeable voyage, the misery of which he compared to two months' hard labor in the State Prison, under sullen skies and a pouring rain. Liverpool impressed him unfavorably. The English sun he could not recognize as the same object to which that name is applied in America. Having been appointed as a member of one of the juries of the World's Fair, he devoted a large part of every day, while he remained in London, to the laborious and thankless duties of that office. The sights of the great British metropolis made but a slight impression on his mind. He describes Hampton Court as larger than the Astor House, but less lofty and containing fewer rooms. Westminster Abbey was only a barbaric profusion of stained windows, groined arches, and all manner of costly and wasteful architecture. The intoning of the ritual, which was then coming into fashion, sounded like a caricature of the Yankee drawl in a Methodist pulpit. He declined attending the Epsom races, through unwillingness to come in contact with the sporting men and swindlers whom that occasion calls together. But he was deeply affected by the want and misery displayed at the Ragged Schools, and vehemently expressed his regret that "he had hitherto said too little, done too little, dared too little, sacrificed too little to awaken attention to the infernal wrongs and abuses that are inherent in the very structure and essence of civilized society, as it now exists throughout Christendom."

After a residence of nearly two months in London, Mr. Greeley took his departure for Paris. He remained only eight days in the gay capital of France, which he by no means found in accordance

with his habitual tastes. At the opera he saw only "a medley of drinking, praying, dancing idol-worship and Delilah-craft such as he had never before encountered." The French people impressed him as intelligent and courteous, but, at the same time, as sensual and irreverent. There were thousands in Paris who could die for liberty, but no class that could comprehend the idea of the temperance pledge.

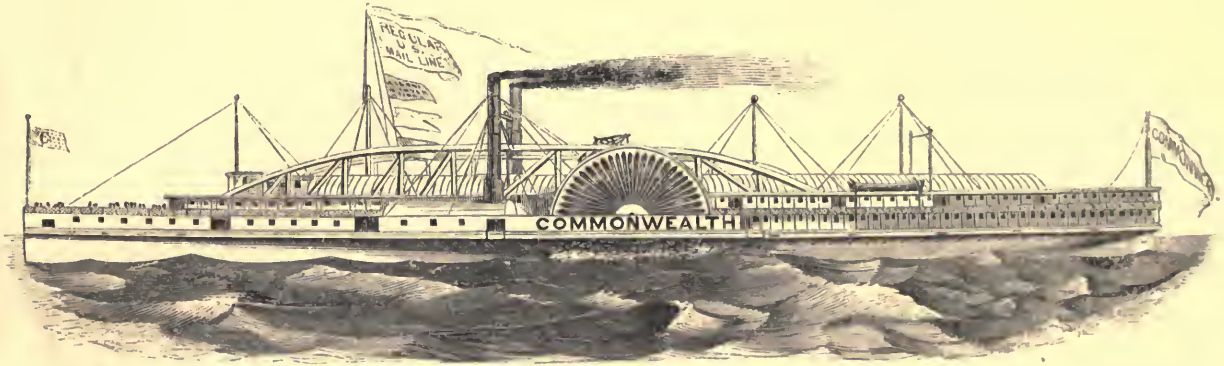
From Paris he started for Lyons, crossing the Alps to Turin, and spending about three weeks in Genoa, Pisa, Florence, Bologna, Venice, Milan, and Rome. The poetical element in the Eternal City presented strong attractions to his mind. He passed most of his time in the galleries of Art. The Coliseum fully equaled the descriptions with which he was familar, but St. Peter's, which he calls the Niagara of churches, was, at first view, a disappointment.

After a rapid journey through Switzerland, Germany, Belgium, and the north-eastern part of France, he returned to London. In Switzerland he was struck with the thrift and contentment of the people. He saw no beggar, and was cheated by no official. The Germans were greatly to his liking, by their good humor, their kindly, unostentatious manners, and their mutual deference and respect. He nowhere saw the signs of chronic aristocracy but in England. Although he did not wholly admire her grave and stately people, he found much to commend in their character. He highly appreciated their industry, their method, their practical sense, and the domestic virtues of the women. The comfort and warmth of the English fireside were a perpetual charm. Mr. Greeley returned from Europe in August, and at once engaged in his usual routine of editorial and political toil.

After an interval of four years, he made a second visit to Europe in 1855, remaining abroad about three months. His previous impressions were confirmed by his new experience. Six weeks in Paris afforded him the nearest approach to leisure which he had enjoyed for thirty years.

In 1859 he put in execution a purpose which he had long cherished, of making a journey across the continent, and forming a personal acquaintance with the region of the Pacific. He was deeply impressed with the majestic promise that impels the Anglo-Saxon race toward the shores of that mighty sea. Another extensive journey in the south-western quarter of the Union was performed in the month of May, 1871, which gave him a gratifying opportunity of meeting with a large portion of his countrymen to whom his name had been long familiar, but who had hitherto been strangers to his person.

A prominent feature in Mr. Greeley's character is his fondness for rural life and rural pursuits. He says of himself that he should have been a farmer. His younger days were spent in its peaceful occupations, and his maturer tastes have given him a keen relish for the calling. If he were to begin his life anew, he would choose to earn



New York and Boston Line, Long Island Sound.

his bread by the cultivation of the soil. After passing twenty years in the city, he determined to seek a quiet retreat in the country for himself and his family. He chose for his new home a rocky, wooded hillside, near the little village of Chappaqua, about thirty-five miles north-east of New York. The farm, consisting of seventy-five acres, one third of which is forest, has the advantage of an unrivaled spring of pure and living water, and a brawling brook which rushes down from its source in granite hills.

On coming into possession of his farm, in 1851, Mr. Greeley's first business was to shut cattle out of the woods, where they had roamed at will for untold years. His own special department in the labors of the farm is the care of the woods. Every Saturday that he can command is devoted to the ax and pruning-knife. He began his career as forester by cutting out the witch-hazels and trimming up the trees, especially the hemlocks. Many of these he has trimmed to the height of fifty feet, climbing the rugged trunks with the activity of a school-boy. The young orchards, which he has planted with his own hands, are in a state of healthy bearing. The arable portions of his farm have been improved by removing rock and stone, systematic underdraining, deep plowing, and the liberal use of artificial and mineral manures, as well as compost from the peat-bog and barn-yard. It now produces excellent crops of Indian corn, oats, turnips, and especially of grass, with occasional harvests of spring-wheat.

Mr. Greeley was married, in 1836, to Mary Cheney, a native of Connecticut, with whom he had become acquainted while boarding at the Graham House in New York. She was a lady of superior intellect and admirable accomplishments, cherishing a strong interest in the reforms to which Mr. Greeley has devoted so large a portion of his life. In pursuance of her vocation as a teacher, she was at that time residing in the State of North Carolina, where the wedding took place. For eight years after his marriage, Mr. Greeley continued to live in the busiest quarter of New York city, always within half a mile of the City Hall. At the end of that time, he turned his face toward the country, and removed to a spacious wooden house, which since the death of its previous owner, had greatly fallen from its ancient state, and was then in a state of decay. It was situated on the East River, nearly opposite the southern point of Blackwell's Island, with eight acres of ground, including a wooded ravine, numerous shade and fruit trees, abundant shrubbery, and an ample garden. The location was so secluded that the house could be reached only by a narrow private lane, and, with no gas-lights, was exceedingly dark at night. Accustomed to the tumult of the large city, Mr. Greeley at first found the silence so unearthly and appalling that he could scarcely sleep on his return from the labors of the day at his office. The house-keeping was in a style of more than primitive simplicity. In accordance with the principles of Graham, which

were even more rigidly followed by Mrs. Greeley than her husband, the diet consisted chiefly of beans and potatoes, boiled rice, bread and butter, with no condiment but salt, and none of the unwholesome dainties that tempt a sickly appetite in fashionable life. Tea and coffee were strictly prohibited, even in the most homeopathic dilutions.

It was during Mr. Greeley's residence in this house that Margaret Fuller became an inmate of his family. His friendship for this remarkable woman was an interesting portion of his experience, and in the highest degree honorable to the character of both parties. During a residence of some weeks, for several successive seasons, in the vicinity of Boston, Mrs. Greeley had formed an intimate acquaintance with Margaret, and conceived for her an ardent attachment. This led to her engagement in the literary department of the *Tribune*, the duties of which she performed with signal ability for nearly two years. Mr. Greeley regarded her as, in some respects, the greatest woman whom America has yet known, while she, on her part, fully appreciated the rare traits of character which have given him so marked an influence among his contemporaries. "Mr. Greeley," she wrote to a friend, "is a man of genuine excellence, honorable, benevolent, and of uncorrupted disposition. He is sagacious, and, in his way, of even great abilities. In modes of life and manner he is a man of the people, and of the American people. With the exception of my own mother, I think him the most generously disinterested person I have ever known."

In the summer of 1849, Mr. Greeley experienced a great sorrow, which has left a vein of tender sadness in his subsequent life. This was the death of his only son, in the sixth year of his age, a child of wonderful gifts and singular promise. As described by his father, this marvelous boy was a model of juvenile beauty—a beauty not merely physical, but visibly radiating from the soul, and to which in visiting the Italian galleries, a year or two later, he could find no parallel. His hair was of the richest and finest gold. "The sunshine of picture" never glorified its equal. The delicacy of his complexion attracted the admiration of observers, who had traversed both hemispheres without seeing a child who could be compared to this one. He displayed a peculiar wisdom beyond his years; his arch sayings are treasured in the memory; while the sunny brightness of his disposition was the charm of the friendly circle that were drawn to the rural residence of the family, no less by their admiration of the son than by their regard for his parents. On the 12th of July, one of the hottest midsummer days of our climate, this precious object of such fond affection and of such sanguine hopes was stricken by the cholera about one o'clock in the morning, and at five o'clock in the afternoon had yielded to the power of the subtle epidemic. He was entirely sane and conscious till near the last, with little or no pain, and with no indication that his end was so near at hand. "When at length,"

says Mr. Greeley, "the struggle ended with his last breath, and even his mother was convinced that his eyes would never again open on the scenes of this world, I knew that the summer of my life was over, that the chill breath of its autumn was at hand, and that my future course must be along the downhill of life."

We close our narrative with the nomination of Mr. Greeley as candidate for the presidency of the United States by the Cincinnati Convention, in May of the present year. As it has been our aim in the preceding sketch to illustrate the personal qualities of Mr. Greeley, by which he has overcome the force of circumstances, and risen to the rank of one of the foremost American citizens, rather than to exhibit an analysis of his political career, or to engage in the discussion of his political views, we simply record the event without superfluous comment.

Mr. Greeley, although now entering upon the decline of life, evinces no diminution of physical or intellectual strength. His habits of rigid temperance have been favorable to the preservation of his powers, and enabled him to accomplish an amount of labor at which, in most cases, the most strenuous industry would stand appalled. In addition to his unceasing toil as a daily journalist, he has written several elaborate volumes which attest the variety of his attainments, the extent of his literary culture, and the persistence of his mental activity. Among the productions of his pen are several poems, most of them composed at an early age, which betray a liveliness of imagination, and a sense of rhythmical harmony, that are rarely found in union with talents and tastes of so decidedly practical a cast. For himself, however, he disdains all pretensions to the character of a poet, and prefers to rest his fame on the utility of his writings. His true position among his countrymen is that which we have endeavored to illustrate in the present memoir, as an example of the conquest of difficulties by force of character. The lesson of his life is the lesson of self-reliance and self-help as the great conditions of success.

[NOTE.—The writer of the preceding memoir acknowledges his obligations to the "Life of Horace Greeley," by James Parton, and to Mr. Greeley's "Recollections of a Busy Life," for the facts on which his narrative is founded.

PART III.

MEN OF THE PEOPLE

WHO BECAME

PUBLIC BENEFACTORS.

JOHN FREDERICK OBERLIN.

THE individual whose entertaining and most instructive life we now bring to the notice of the reader, is a remarkable exemplification of the good which an actively benevolent person may sometimes accomplish, in a particular locality, under the most disadvantageous circumstances.

Oberlin was a native of Strasbourg, and, after being educated as a Lutheran clergyman, was appointed, in 1767, when twenty-seven years of age, to the Cure of Waldbach, in the Ban de la Roche, a high and sterile valley in Alsace. His mind was animated with the most ardent desire of usefulness, not only in his profession, but in many other respects; and greatly did his parish need the attentions of such a philanthropist. The whole valley afforded subsistence, and that of the most wretched kind, for only about a hundred families, who were a race of rude and ignorant rustics, cut off by their peculiar dialect, as well as by the inaccessibility of their situation, from all the rest of mankind. The husbandmen were destitute of the commonest implements, and had no means of procuring them; they had no knowledge of agriculture beyond the routine practices of their forefathers; they were ground down and irritated by a hateful feudal service. He devoted himself to the correction of these evils, at the same time that he labored in his spiritual vocation. The people at first did not comprehend his plans or appreciate his motives. Ignorance is always suspicious. They resolved, with the dogged pertinacity with which the uneducated of all ranks cling to the rubbish of old customs, not to submit to innovations.

The peasants agreed on one occasion to waylay and beat him, and on another to duck him in a cistern. He boldly confronted them, and subdued their hearts by courageous mildness. But he did more; he gave up exhorting the people to pursue their real interests; he practically showed them the vast benefits which competent knowledge and well-directed industry would procure for them.

These mountaineers in many respects were barbarians; and he

resolved to civilize them, as all savages are civilized, by bringing them into contact with more enlightened communities. The Ban de la Roche had no roads. The few passes in the mountains were constantly broken up by the torrents, or obstructed by the loosened earth which fell from the overhanging rocks. The river Bruche, which flows through the Canton, had no bridge but one of stepping stones. Within a few miles of this isolated district was Strasbourg, abounding in wealth and knowledge, and in all the refinements of civilization. He determined to open a regular communication between the Ban de la Roche and that city; to find there a market for the produce of his own district, and to bring thence in exchange new comforts and new means of improvement. He assembled the people, explained his objects, and proposed that they should blast the rocks to make a wall, a mile and a half in length, to support a road by the river, over which a bridge must also be made. The peasants one and all declared the thing was impossible, and every one excused himself from engaging in such an unreasonable scheme. Oberlin exhorted them, reasoned with them, appealed to them as husbands and fathers, but in vain. He at last threw a pickax upon his shoulder and went to work himself, assisted by a trusty servant. He had soon the support of fellow-laborers. He regarded not the thorns by which his hands were torn, nor the loose stones which fell from the rocks and bruised them. His heart was in the work, and no difficulty could stop him. He devoted his own little property to the undertaking; he raised subscriptions among his old friends, and tools were bought for all who were willing to use them.

On the Sunday the good pastor labored in his calling as a teacher of sacred truths; but on Monday he rose with the sun to his work of practical benevolence, and, marching at the head of two hundred of his flock, went with renewed vigor to his conquest over the natural obstacles to the civilization of the district. In three years the road was finished, the bridge was built, and the communication with Strasbourg was established. The ordinary results of intercourse between a poor and a wealthy, a rude and an intelligent community, were soon felt. The people of the Ban de la Roche obtained tools, and Oberlin taught their young men the necessity of learning other trades besides that of cultivating the earth. He apprenticed the boys to Carpenters, Masons, Glaziers, Blacksmiths, and Cartwrights, at Strasbourg. In a few years these arts, which were wholly unknown to the district, began to flourish. The tools were kept in good order; wheel-carriages became common; the wretched cabins were converted into snug cottages; the people felt the value of these great changes, and they began to regard their pastor with unbounded reverence.

Oberlin, however, had still some prejudices to encounter in carrying forward the education of this rude population. He desired to teach them better modes of cultivating their sterile soil; but they would not listen to him. "What," said they, with the common preju-

dice of all agricultural people in secluded districts, "what could he know of crops, who had been bred in a town?" It was useless to reason with them; he instructed them by example. He had two large gardens near his parsonage, crossed by footpaths. The soil was exceedingly poor; but he trenched and manured the ground with a thorough knowledge of what he was about, and planted it with fruit trees. The trees flourished, to the great astonishment of the peasants; and they at length entreated their pastor to tell them his secret. He explained his system, and gave them slips out of his nursery. Planting and grafting soon became the taste of the district, and in a few years the bare and desolate cottages were surrounded by smiling orchards. The potatoes of the Canton, the chief food of the people, had so degenerated that the fields yielded the most scanty produce. The peasants maintained that the ground was in fault; Oberlin on the contrary procured new seed. The soil of the mountains was really peculiarly favorable to the cultivation of this root, and the good minister's crop of course succeeded.

The force of example was again felt, and an abundance of potatoes soon returned to the canton. In like manner Oberlin introduced the culture of Dutch clover and flax, and at length overcame the most obstinate prejudice, in converting unprofitable pastures into arable land. Like all agricultural improvers, he taught the people the value of manure and the best modes of reducing every substance into useful compost. The maxim which he incessantly repeated was, "let nothing be lost." He established an Agricultural Society and founded prizes for the most skillful farmers. In ten years from his acceptance of the pastoral office in the Ban de la Roche, he had opened communications between each of the five parishes of the Canton and with Strasbourg, introduced some of the most useful arts into a district where they had been utterly neglected, and raised the agriculture of these poor mountaineers from a barbarous tradition into a practical science. Such were some of the effects of education in the most comprehensive sense of the word. The instruction which Oberlin afforded to the adults of his Canton was only just as much as was necessary to remove the most pressing evils of their outward condition, and to impress them with a deep sense of religious obligation.

But his education of the young had a wider range. When he entered the ministry, the hut which his predecessor had built was the only school-house of the five villages composing the Canton. It had been constructed of unseasoned logs, and was soon in a ruinous condition. The people, however, would not hear of a new building; the log-house had answered very well, and was good enough for their time. Oberlin was not to be so deterred from the pursuit of his benevolent wishes. He applied to his friends at Strasbourg, and took upon himself a heavy pecuniary responsibility. A new building was soon completed at Waldbach, and in a few years the inhabitants in

the four other parishes came voluntarily forward to build a school-house in each of the villages. Oberlin engaged zealously in the preparation of teachers for these establishments, which were to receive all the children of the district when of a proper age. But he also carried the principle of education farther than it had ever gone in any country. He was the founder of infant schools. He saw that, almost from the cradle, children were capable of instruction; that evil habits began much earlier than the world had been accustomed to believe; and that the facility with which mature education might be conducted, greatly depended upon the impressions which the reason and the imagination of infants might receive. He appointed *conductrices* in each commune, paid at his own expense, and established rooms, where children from two to six might be instructed and amused; he thus gave the model of those beautiful institutions which have first shown us how the happiness of a child may be associated with its improvement, and how knowledge and the discipline which leads to knowledge are not necessarily

"Harsh and crabbed, as dull fools suppose."

The children in these little establishments were not kept "from morn till noon, from noon till dewy eve," over the horn-book and primer. They were taught to knit, and sew, and spin; and when they were weary, they had pictures to look at, and maps engraved on wood for their special use, of their own Canton, of Alsace, of France, and of Europe. They sang songs and hymns, and they were never suffered to speak a word of *patois*. This last regulation shows the practical wisdom of their instructor. There are parts of Great Britain which will always fall short of the general civilization, as long as the languages which have no literature continue to be spoken there. The Welsh, and Irish, and Gaelic, however venerable in the eyes of the antiquaries, are effectual obstacles to the civilization of the districts from which they are not yet rooted out.

When the children of the Ban de la Roche—the children of peasants, be it remembered, who a few years before the blessing of such a pastor as Oberlin was bestowed upon them, were not only steeped to the lips in poverty, but were groping in that darkness of the understanding which too often accompanies extreme indigence; when these children were removed to the higher schools, which possessed the most limited funds, they were taught reading, writing, arithmetic, geography, astronomy, sacred and profane history, agriculture, natural history, especially botany, natural philosophy, music, and drawing. Oberlin reserved for himself, almost exclusively, the religious instruction of this large family; and he established a weekly meeting of all the scholars at Waldbach. The inhabitants of Strasbourg and of all the neighboring towns from which the Ban de la Roche had been recently cut off, came to look upon the wonders which one man had effected. Subscriptions poured in upon the disinterested pastor, and

endowments were added. Well did he use this assistance; he founded a valuable library for the use of the children; he printed a number of the best school-books for their particular instruction; he made a collection of philosophical and mathematical instruments; he established prizes for teachers and scholars.

Thus did this extraordinary man strive to raise the intellectual standard of his parishioners, whilst he labored to preserve the purity of their morals and the strength of their piety. Never did religion present more attractive features than in the secluded districts of the Ban de la Roche. The love of God was constantly inculcated as a rule of life; but the principle was enforced with no ascetic desire to separate it from the usefulness and the enjoyment of existence. The studies in which these poor children were trained, contributed as much to their happiness as to their knowledge. They were not confined for years to copying large text and small hand, to learning by rote the one spelling-book, to hammerring at the four rules of arithmetic without understanding their principles or their more practical applications.

The children of Oberlin's schools were taught whatever could be useful to them in their Agricultural and Rural life, and whatever could enable them to extract happiness out of their ordinary pursuits. They were incited to compose short essays on the management of the farm and orchard; they were led into the woods in search of indigenous plants, to acquire their names, and to cultivate them in their own little gardens; they were instructed in the delightful art of copying these flowers from nature; it was impressed upon their minds that as they lived in a district separated by mountains from the rest of mankind, and, moreover, a district naturally sterile, it was their peculiar duty to contribute something towards the general prosperity, and thus previously to receiving Religious Confirmation, Oberlin required a certificate that the young person had planted two trees. Trees were to be planted, roads were to be put into good condition and ornamented, to please Him "who rejoices when we labor for the public good." Surely a community thus trained to acquire substantial knowledge, equally conducive to individual happiness and general utility, were likely to become virtuous and orderly members of society, contented in their stations, respectful to their superiors, kind to each other, hospitable to the stranger, and tolerant to those who differed from them in opinion. Oberlin lived to see the excellent results of his wise and benevolent system.

In 1784 Oberlin lost his excellent wife. There was a servant in his family, an orphan named Louisa Schepler, who had been brought up in his schools, and was afterwards one of the *conductrices* of the Infant establishments. After being the nurse of Oberlin's children for nine years following the death of their mother, the poor girl wrote to her master, to beg that she might be allowed to serve him without wages.

"Do not, I entreat you," she says, "give me any more wages; for as you treat me like your child in every other respect, I earnestly wish you to do so in this particular also. Little is needful for the support of my body. My shoes, my stockings and *sabots* will cost something; but when I want them I can, as a child, ask you for them,

In the course of twenty years, the population of the Ban de la Roche had increased to six times the number that Oberlin found them when he entered upon his charge. The knowledge which their pastor gave to the people gave to them also the means of living, and the increase of their means increased their numbers. The good minister found employment for all. In addition to their Agricultural pursuits, he taught Straw-plaiting, Knitting, and Dyeing with the plants of the country.

In the course of years, Mr. Legrand, of Basle, a wealthy and philanthropic manufacturer, who had been a Director of the Helvetic Republic, introduced the weaving of Silk Ribbons into the district.

The people of the Ban de la Roche for eighty years had been in dispute with the *seigneurs* about their right to the forest, to which each party laid claim. In 1813 Oberlin persuaded his flock to come to an accommodation, which should at the same time have respect to the claims of the owners, and secure a due portion of their own proper privileges. He convinced them that this ruinous contest was the scourge of the country, and that it was the duty of all men to live in peace. The parties agreed to an accommodation advantageous to both sides; and the pen with which the deed of pacification was signed was solemnly presented to him by the Mayors of the Canton. It was for that pen to record, as clearly as facts can speak, that an educated people are the truest respectors of the rights of property! Without an acquaintance with their political duties (that part of education which is often most fearfully neglected among ourselves), Oberlin could never have convinced those peasants that any portion of the claims of the *signeurs* were founded in justice and the common good.

Oberlin died in the year 1827, when he had attained a very great age. The difficulties which he had surmounted, and the actual good which he did, should be a lesson of encouragement to all individuals who may be situated with the means of producing some local improvement within their reach. In the fullness of his heart, the venerable man, looking round upon the valleys which he had filled with the peacefulness of contented industry, and upon the people whom he had trained to knowledge, and to virtue the best fruit of knowledge, he exclaimed, "Yes, I am happy!" And when he died he was followed to the grave by an entire population, upon whom he, a poor but industrious clergyman, had showered innumerable blessings, the least of which the idle and self-indulging lord of thousands has neither the grace to will nor the spirit to bestow.

STEPHEN GIRARD.

FEW individuals in recent times have rendered themselves more famous than this eccentric and singular Frenchman, who for sixty years resided in Philadelphia, and became one of its greatest merchants and bankers. He did not possess much of that true worth which should render his memory respected, but his life presents a remarkable instance of great results, achieved by small means carefully and skillfully managed.

Girard was a native of Bourdeaux, and was born in the year 1750. His parents were poor, and he received no other education than is implied in the fact that when he was a child he was taught to read and write. Although nearly his entire manhood was spent in his adopted city he never acquired a sufficient knowledge of the English language to speak it correctly; but the native vigor of his mind supplied in large measure such deficiencies as in most other men, would have been insuperable barriers to success.

In his mature years he often referred to the ridicule, from which he suffered in his early youth, because of the distorted features of his face, produced by his defective eye.

At the age of ten or twelve years he shipped as a cabin boy on a small vessel bound to the West Indies, and afterwards sailed from New York in the same humble capacity. At this time his conduct was so exemplary as to win the complete good-will of the master of the vessel; he was so much pleased with his fidelity and industry, that he not long after gave him the command of a small craft, in which Girard made several voyages to New Orleans and other ports. His great frugality and success in such small speculations as he could then engage in, put it in his power soon to become part owner of a vessel, in which he continued to sail as master.

In 1769 Girard, then but nineteen years of age, established himself in Philadelphia, and in the course of the next year he married Polly

Lum, the pretty daughter of a caulker, then in her seventeenth year, and a servant girl in his neighborhood. His marriage did not prove a happy one, because of the asperity of his temper; and the final result was a divorce from his wife, who afterwards became insane, and for the last twenty-five years of her life she was an inmate (1790 to 1815) of a lunatic asylum. She bore him but one child, who died in infancy.

Girard's commercial operations were interrupted by the war of the Revolution, so that for several years he was occupied as a grocer and dealer in liquors; he, however, again entered the West India trade, and was soon recognized as a rich man. Though he was in general, morose in his manners, and harsh in his disposition, yet, during the prevalence of the yellow fever at Philadelphia, in 1793, he distinguished himself by his active benevolence in attending the sick, and on all occasions he manifested a singular readiness to afford medical advice and personal assistance to such sufferers as came under his notice, while, at the same time, he would never relieve the distresses of his friends or relatives, whether their troubles arose from bodily ailments or a collapsed condition of purse.

The first impressions upon the spectator made by Stephen Girard were decidedly unfavorable; his person was altogether quite forbidding. His vulgar exterior, his cold, abstracted, and taciturn habits did not fail to excite in the mind of the casual observer a feeling approaching to contempt. He was short and square built, and resembled an old sailor. His wall-eye, mean garb, and general presence contrasted so strikingly with his large fortune, that one could scarcely fail to feel disgusted at his appearance and bearing. He was partially deaf in one ear, and his conversation was sadly disfigured by his broken French dialect. He talked but little, except on business, and then said no more than was necessary to make himself understood. His volubility, however, when excited by anger, was without a parallel, especially when among his workmen and dependents, and his language was not either refined or courteous. But to compensate for these ebullitions of temper towards his inferiors, he had the art of conciliating them by the most fascinating displays of occasional good nature, which impressed them favorably, and led to great readiness on their part to serve him devotedly.

In his habits of attention to business, Mr. Girard was precise and regular; perhaps more so at his counting-room than at his bank. On discount days, at the latter, he observed regular hours. During the spring and summer months he was accustomed to spend an hour or two each morning in a garden attached to his bank, where he employed himself in nursing his fig-trees, dressing his shrubs, and pruning his vines.

At the venerable age of eighty-one he died, and was buried without religious ceremonies in a Roman Catholic cemetery. His will devised an immense estate,—perhaps greater than was ever before given,—for

Girard College, Philadelphia. (See pages 753 and 754.)

purposes wholly beneficent and charitable, which led to prolonged litigation in the courts of Pennsylvania. In these legal contests Daniel Webster and other eminent counsel were conspicuous.

Mr. Girard's estate was valued at about twelve millions of dollars, and was all devoted to educating destitute children, and the relief of the poor and distressed. To the Pennsylvania Hospital he bequeathed $30,000,—charged with an annuity of $200 to a female slave whom he set free; to the Deaf and Dumb Asylum, $20,000; to the Philadelphia Orphan Asylum, $10,000; to the Philadelphia Public Schools, $10,000; to the City Corporation, for investment, the interest to be applied annually for the purchase of fuel for the poor, $10,000; to the Society of Shipmasters, to relieve distressed masters, their widows and children, $10,000; to the Grand Lodge of Freemasons, Pennsylvania, $10,000; for a school for poor white children in Passayunk (where his farm was), $6,000; legacies to individuals, about $120,000; annuities amounting to about $4,000; to the city of New Orleans, 1,000 acres of improved land in Louisiana, and one-third of 207,000 acres of unimproved land in said state, the remaining two-thirds being devised to the city of Philadelphia; to the latter city, stock in the Schuylkill Navigation Company, $110,000; for the erection and endowment of a (Girard) College (Philadelphia), for poor white male orphans, $200,000, with provision that, should this sum prove insufficient, the necessary sum should be taken from the residuary fund; to Philadelphia, for certain city improvements, to be invested and the interest annually applied, $500,000; to the State of Pennsylvania for internal improvements by canals, $300,000; to the city of Philadelphia, all his remaining real and personal estate (no part of the former to be sold), estimated to be worth $8,000,000, in aid of the Orphans' ("Girard") College, if needed, for improvements of the city, and the relief of taxes. The control and guardianship of the college was given to the Mayor, Aldermen, and citizens of Philadelphia, and the site fixed by Mr. Girard on "Peel Hill," situated, as stated then, in Pennsylvania Township, on the Ridge Road, on premises containing forty-five acres, on which such buildings were to be erected as would accommodate at least 300 scholars, with buildings for teachers and all purposes proper to the institution. In his will Mr. Girard gave particular directions for constructing the buildings as to form, size, and materials. The foundations of the main edifice were laid in the summer of 1833, but the structure was not completed and opened until the beginning of 1848. The principal building is said to be the finest modern specimen of Grecian architecture. The form is that of a Corinthian temple, surrounded by a portico, having thirty-four columns, each six feet in diameter and fifty-five high, resting on a basis of eleven white marble steps. The building is ninety-seven feet high, one hundred and eleven feet wide, and one hundred and sixty-nine feet long. The walls are of white marble, and the stairways and roof also. The entrances are

on the north and south fronts, each having doorways thirty-two feet high and sixteen feet wide. There are twenty-four windows on each of the east and west sides. Mr. Girard's remains were buried beneath the center of the lower vestibule and are covered by a marble statue. Besides this main edifice there are five other buildings within the inclosure—a laboratory, a wash-house, bakery, etc. The cost of erecting the whole was but little less than $2,000,000. Provision was made by the will for supporting as many poor orphans as the premises could be made to accommodate; *first*, those of Philadelphia; *secondly*, those of Pennsylvania; *thirdly*, those of the city of New York; and, *fourthly*, of New Orleans. These poor orphans to be taught "the various branches of a sound education," etc., etc., and "the French and Spanish languages," the Latin not being forbidden, but not recommended. Also such other learning and science to be taught as the capacities of the several scholars should merit or warrant. Principles of morality to be inculcated, but, in the terms of the founder's will (showing his singular and eccentric character), no ecclesiastic missionary or minister, of any sect whatsoever, shall ever hold or exercise any station or duty whatever in said college; nor shall any such person ever be admitted within the premises appropriated to the purposes of said college." Orphans are admitted between the ages of six and ten years, and are fed, clothed, and educated, and when between fourteen and eighteen years are bound out to learn some useful occupation, often to agriculturists, mechanics, etc. As many are admitted to the institution as the endowment will support.

It is to be remarked that the trustees of Girard College early decided to introduce the Bible for the use of the scholars, as not being inconsistent with the will of the founder; and as a commentary upon the course of human events, it may be stated that the present President of that noble institution is likewise President of the American Bible Society, and an LL. D. of eminent attainments and the highest religious character, who fills his position in the college acceptably and with signal ability.

Mr. Girard died in 1831, and now, after an interval of forty years, no clergyman is allowed to enter the college or its beautiful grounds, situated on Girard Avenue, in one of the most beautiful portions of Philadelphia.

GEORGE PEABODY.

EARLY in November, 1869, some unusually solemn funeral obsequies were celebrated in Westminster Abbey. Under the noble arches of that venerable pile, where repose the ashes of England's most famous dead; where the dust of sovereigns mingles with the common clay of earth; where sleeps the long line of kingly poets, whose potent genius has moved for centuries the tears and laughter of the world; where philosopher and divine, prince and statesman, form a hallowed circle, within which no meaner name than that of royalty dare enter, stood the simple coffin of George Peabody, merchant. Among all the reverend shadows which haunt the spot, lay the remains of the American country boy, graduate of America's humblest university, the New England District School; the merchant, who had climbed by low steps to princely fortune; the philanthropist, who in his old age had so endeared himself to the hearts of two English-speaking peoples, that each vied with the other to do honor to his dust. Around his coffin earls doffed hats and stood with uncovered heads while a royal bishop read the funeral service; and when all was over, the carriage of a queen followed his embalmed body to the ship of royal line, which was to bear it to the humble shades of a New England cemetery, for its final resting-place. Never did simple worth and pure benevolence command their meed of reverence more fully than in the case of the man of whose life these pages propose to give a brief epitome.

George Peabody belongs to an old and respectable family. In the first record of the business transactions of the town of Topsfield, Massachusetts, the name of Lieutenant Francis Peabody appears. He came from Hertfordshire, England, in 1667. His wife was a daughter of Reginald (or Roland) Foster, who was of the party at Branksome Hall, when Scots and English together toasted "Cranstown's lord and fair Margaret."

* "Where many a yeoman, bold and free,
Revelled as merrily and well,
As those that sat in lordly selle.
Watt Tinlinn there did frankly raise
The pledge to Arthur Fire-the-braes;
And he, as by his breeding bound,
To Howard's merry-men sent it round.
To quit them, on the English side,
Red Roland Foster loudly cried,
'A deep carouse to yon fair bride.'"

Of Lieutenant Francis Peabody's five stalwart sons, three went to reside in Boxford, the other two remaining in Topsfield. From these five brothers sprang all the American Peabodys'. Several of these have stood high in different professions, and especially in the ministry, where are found many eminent names.

Thomas Peabody, the father of George, lived in South Danvers, Massachusetts, a characteristic New England village, adjoining the old town of Salem. Of all the towns in this country where the laws of growth and change prevail, none better prove the exception to the almost universal rule, than those old towns which cluster about some of the seaport cities of New England as their commercial and metropolitan center. Danvers, Marblehead, Ipswich, and half a dozen other villages near Salem, lead year after year, a quiet, changeless existence, unconscious of the moving of those forces which every twenty-five or thirty years build up a Chicago, Cincinnati, or San Francisco. When George Peabody was born, February 18th, 1795, we doubt if his eyes opened upon a very different scene from that which the visitor to his birth-place would behold to-day. The elms have grown larger, the houses have had an occasional coat of white paint, the blinds a fresh green; but there is the same long village street, bordered with quiet-looking houses, and the same straggling suburbs, which wander off to join the town of Salem, as in George Peabody's early days. The chief marks of improvement are the fine building which the town owes to his generosity, and the single horse-car track, stretching out from Salem, over which a one-horse car rolls at rare intervals during the day.

The house where he was born is still standing—just the house you would expect to find: Two stories, with the front door in the middle; two windows each side of the front door; the house built close to the street, and painted white, with green blinds. The blinds are probably a modern improvement, and so is the long L built out from the main body. In George's childhood, no doubt, green paper curtains flapped at the windows to exclude the sun in summer; and the four rooms in the main part of the house were then large enough to serve the growing family of Thomas Peabody. The house is built in the strong, staunch fashion of those times, the rooms, perhaps

* Lay of Last Minstrel.—SCOTT.

seven feet high, having a heavy beam running across the ceiling, under which a tall man would stoop to pass. The Peabodys, it seems, did not often grow too tall for such a ceiling, and George Peabody himself, although he was a broad-shouldered, well-made man, was never of such commanding height that he was obliged to stoop in the home of his boyhood.

We know little of his early days, but it requires small stretch of the imagination to paint them. He was a member of the district school, and learned there a little reading and spelling and geography. There was not much need of studying the "History of our country," for the Revolutionary War was fresh in his father's memory. When George Peabody was born, Washington was serving out the last year of his second term of the Presidency. He was instructed principally in Penmanship and Arithmetic, and must have improved his opportunities for perfection in the former branch, for it is related of him, that, when he was fifteen years old, a clerk in his brother's store in Newburyport, he earned the first money, outside his meager salary, by writing ballots for the Federal party, on election day. All his life, too, he is said to have written a precise and very shapely hand. He undoubtedly mastered the rudiments of Arithmetic in these early days, but he must have added largely to his slender stock of knowledge before he could decide the fate of the millions which flowed through the great banking house of Peabody & Co., in London.

The Peabodys, as a family, took to trade, and not to the farm. Two of the family were already proprietors of country stores, when George entered the employment of Mr. Sylvester Proctor in Danvers. Amid a motley assortment of codfish, calico, oil, molasses, stockings knit of home-spun yarn, drugs and patent medicines, the boy of eleven began business life. Four years were spent in this employment,—patiently and honorably spent,—till the boy had grown into a strippling of fifteen. In the main street of South Danvers (now called Peabody) one can still see the old building, half store and half dwelling-house, with a little window high up among the rafters, which looks out from the attic bedroom where George Peabody slept when he lived under his employer's roof.

At fifteen, his mode of life took a sudden change for a year. Perhaps he wished to try if a farmer's life would suit his taste better than the grocer's store; perhaps his parents wanted him to have a little rest after the long years of confinement at the counter. At any rate, he went to his grandfather's farm in Thetford, Vermont, to spend a year there.

His grandfather, Jeremiah Dodge (his mother's father), and his uncle Eliaphet, both owned fertile farms in the Connecticut valley, in that part of Thetford known as Post Mills village. Here George found a great family of cousins,—stout boys, who worked on their father's farm, and brisk, deft-handed girls, who took care of the dairy,

spun and wove the cloth for family use, and worked cheerfully from morn till eve.

It is probable that George joined the boys in their labor; and it is likely, also, that he may have added to his scanty store of book-learning by attending the winter school. For this surmise we can find no confirmation; but if he did go to school that winter, it was his last and only opportunity. From the time he left Vermont, he plunged into active life; and all his after culture must have come from his experience and observation in the great world of trade and society. Perhaps his lack of early educational advantages gave to him his thorough respect for books, libraries, and all such appliances of learning. Certain it is, that all his charities leaned largely in one direction. Wherever any portion of his life, from earliest boyhood, had been spent, he has marked that spot in our memories, by a gift to promote intelligence and culture there. Thus the little village of Post Mills, Thetford, bears evidence of his bounty in the shape of a town library, free to the inhabitants, which has the name of "Peabody Library."

After a year in Thetford, George went back to his father's house in Danvers. On his return, he passed through Concord, the elm-shaded capital of New Hampshire. Years after, when he was the honored guest of that city, one of the committee who were entertaining him asked if he had ever been in Concord before.

"Yes, sir, once certainly," answered Peabody, with a twinkle of the eye, "I spent one night here in journeying from my grandfather's, in Thetford, Vermont. I put up at the hotel here, and sawed wood enough to pay for my night's lodging."

In 1811, being now sixteen years old, he joined his brother David in the old town of Newburyport. Here the elder had established a "dry goods store," and hither George went to serve as his clerk and assistant. His manners were always marked by that true and hearty courtesy which won him friends in all his business relations. The affability he showed to customers, the alacrity with which he carried out the wishes of his employers, were always marked traits in his character. Even after his immense fortune was made, he was noted for his suavity in all his business transactions. A bluff, old drayman, who was often employed to transport luggage for him, used to say: "Mr. Peabody, bless his soul, why he would be just as nice a man if he wasn't worth a dollar. He is such an easy and comfortable kind of a man to have 'round."

His stay in Newburyport was brought to a sudden close. Newburyport, in later times, has been famous for its fires. For years, sudden and inexplicable conflagrations have formed the staple excitement of that otherwise torpid old city. We are, therefore, not surprised to learn that a sudden fire broke out one evening in David Peabody's store, and consumed the building and stock of goods. George was just putting up the shutters, and he was the first to give the

alarm. It was too late, however; and with the burning of his brother's store, his residence in Newburyport ended.

This was the first turn in the tide of his affairs which helped him on to fortune. If he had remained in Newburyport, in company with his brother, he might have achieved a mediocre success as a retail merchant. But the fire drove him away, and, going out into larger fields for business, he soon found the measure of his power.

His uncle, John Peabody, was keeping store in Georgetown, near Washington, D. C., and, on hearing of the calamity in Newburyport, he sent for George to come to him. With his uncle he remained two years, winning golden opinions from all who knew him, by his politeness, his genial manners, and his attention to business.

He was an agreeable companion, too, ready with a good joke, and had a hearty appreciation of fun. He was a keen sportsman, and, above all, fond of Isaac Walton's favorite pursuit. His salary was still very small, and his habits were frugal always, but a select society of young men, who knew no lack of pocket-money, were glad to pay his expenses in fishing and hunting parties, if he would join them, in his leisure hours.

"I would gladly pay his share of the expenses in those days, to share his society," said one of his old companions, in speaking of their youthful days, long afterwards.

Shortly after his arrival in Georgetown, the war of 1812, between America and England, broke out. Young Peabody was not yet of legal age for a soldier, but he went forward and offered his services. They were accepted. He was made a member of an artillery force, and sent to Fort Warburton, to guard the river approach to the Capital. But the expected attack was not then made by the British, and Peabody was released from active duty. Years afterwards, Congress remembered his services with the gift of one hundred acres of land.

At the end of the two years spent with his uncle, George Peabody was nineteen years old. His business habits were now formed. All the circumstances of his life, and the natural bent of his character, seem to have been steadily training him for a successful merchant. He was still a youth in years, and in appearance, but a youth who possessed the method and clear insight of a much older man. He had attained his full height, which was about five feet eight, although in later years his portly figure, and the dignity of his bearing, gave him the appearance of a much larger man. He had a clear complexion, an honest, open blue eye, with light hair, and was altogether an embodiment of earnest, industrious, intelligent young manhood.

Mr. Elisha Riggs, of Georgetown, was at this time looking out for a business partner. After considering the matter carefully, he sent for young Peabody, and invited him to join him in the wholesale trade in dry-goods; he furnishing the capital, and the young partner in the firm transacting the larger part of the business.

Peabody hesitated. His mind took in at once all the advantages

of this offer to himself. But his strict sense of honesty would not allow him to omit stating to Mr. Riggs what might be disadvantageous to him.

"Mr. Riggs," he said, looking with his honest blue eyes full into the face of his proposed partner, "I see but one objection to your plan, but I fear you will think that a great one. I am only nineteen years old. I fear I am too young a man to risk your enterprise with."

"Never mind your age," answered the shrewd merchant. "I know what I want. If *I* don't find fault with your youth, you need not. Will you accept my offer?"

The bargain was closed; and stepping over, in this one stride, several rounds in the ladder of fortune, George Peabody became the junior partner in the firm of Riggs & Peabody, wholesale merchants.

For a few years his position in the firm was much like that of a commercial traveler. He journeyed through Virginia, Maryland, Pennsylvania, and New York, almost always on horseback, for the country was not then netted with railways, becoming acquainted with the people, and establishing in a large circuit the credit and reputation of the firm. In 1815, the house removed to Baltimore. Seven years later, branch houses were opened in New York and Philadelphia; and in 1830, after sixteen years of partnership, Riggs & Peabody dissolved. Riggs retired from business, leaving Peabody, at thirty-five years of age, the senior partner in one of the largest and richest mercantile houses in the United States.

In 1827, before the retirement of Mr. Riggs, Mr. Peabody made his first trip across the Atlantic. After the dissolution of the firm, he gradually withdrew from its business, and finally, in 1837, established a house in London, under the name of George Peabody & Co., Warnford Court, City. The financial panic in this country, known as the "crisis of 1837," followed close upon Mr. Peabody's permanent removal to London. This year was one of the saddest in our civil history. Three-fourths of all the banks in the country fell, and thousands were ruined. American merchants, and those English merchants who dealt exclusively with the United States and her securities, saw nothing but disaster staring them in the face.

In this juncture, the State of Maryland remembered Peabody, and caught at the hope of his serving them in England. They appointed him one of three commissioners to devise some means for saving the credit of the State. His services at this time were never forgotten by Maryland. He worked with disinterested zeal, refusing all remuneration. "There were probably not a dozen men in Europe," says Edward Everett, "who, upon the subject of American securities, would have been listened to for a moment in the parlor of the Bank of England. But his judgment commanded respect, his integrity won back the reliance which men had been accustomed to place

on American securities; and if on this solid basis of unsuspected good-will he reared his own prosperity, let it be remembered that, at the same time, he retrieved the credit of the State of Maryland, of which he was agent, performing the miracle by which the word of an honest man turns paper into gold."

From 1837 dates his great and constant increase of prosperity. In London, and in all the manufacturing centers, he bought English manufactures at the lowest prices, shipped them to the United States, and in return received American produce. But this was not the trade which brought him most profit. The merchants and manufacturers, American and English, who dealt with him, often procured money advances from him on account of the goods they had placed in his hands before they could be sold. Others left money with him after the goods were disposed of, knowing they could draw a fair rate of interest while it remained in his hands. Thus gradually he slid from the occupation of a merchant to that of a banker, and finally dealt altogether in money and securities. His career of prosperity is almost unexampled. In six years from the time he was fixed in London, and was negotiating to save the credit of his adopted State, he was running a race with rich houses—as those of Gurney, Rothschilds, and the Barings.

The head of the house of Baring was Joshua Bates, also an American, and a native of Massachusetts. He was born in Weymouth, and had been in England since 1815. His benefactions were noble, and the magnificent reading-room in the Boston Public Library bears the name of Bates Hall, from the munificent endowment which he gave that institution.

Peabody's life in London was an unostentatious one. He was always simple and modest in his habits, yet genial and fond of society. He never kept house, but lived in a suite of bachelor apartments. It is said that in the ten most prosperous years of his life, his personal expenses were never over three thousand dollars per annum. Yet he was always hospitable. American visitors in London testified for years, to the charm of the little dinners he was accustomed to give to select parties of guests. Sometimes he arranged a pleasant party at Hampton Court; sometimes at Richmond, and often at the club of which he was a member. These dinners were celebrated for their elegance. In the perfection of the cookery and appointments, he took great pride. Yet his own tastes were exceedingly simple. Often, at the head of the sumptuous entertainment he had provided for his guests, he sat with only a plainly cooked mutton-chop before him, while course after course of different degrees of richness, all tempting the appetite of the gourmand, passed him by. Fruit was his chief luxury, and he always had the choicest sorts on his table at every meal. To his frugal habits he was no doubt indebted for his robust and vigorous old age. After a life of unstinted devotion to business, he was hale and fresh in his seventieth year.

In society he could talk forcibly and well. His memory always tenacious of the facts and associations of his life, as his benefactions will testify, was richly stored with incidents which made him an entertaining companion. His observation was wonderfully quick and acute, and his appreciation of other men's good points made him able to draw people out in conversation in the manner which displayed them to the best advantage.

His favorite evening amusements were whist and backgammon. After dinner was over at his club, or in his own apartments, it was his greatest satisfaction to get together three appreciative companions, and sit down to Sarah Battle's favorite game. Like her, he scorned the flippant players, who amused themselves at whist without earnestness or a true reverence for the game, and sat down to it as a serious matter—a thing not to be engaged in in a trifling spirit. Later in the evening he would play backgammon, as a relief from the more vigorous requirements of whist. Over this game he could jest, and crack a good joke once in a while; but whist to him, as to all genuine whist-players, was a serious pursuit.

When the size of the company forbade games for private amusement, singing was his favorite entertainment. He particularly liked simple ballad-singing—especially Scotch songs. *Auld Robin Grey*, *Bonny Dundee*, or *Robin Adair*, would touch and stir him as no foreign music ever could.

No voice at his own fireside ever won him from care or soothed him to rest. He remained a bachelor all his life. There are many explanations of, and reports about, his unmarried state—all agreeing on one point; that at one time, after he had taken up his abode in London, then an elderly bachelor, he was engaged to a beautiful and loveable woman. Discovering, after their engagement, that she loved another, he released her from the engagement, and never married. The most trustworthy in appearance of all these reports was printed after his death in the 'Providence Journal,' and as it bears strong evidence of truth, it is here given in the words of the unknown correspondent of that paper.

"More than thirty years ago, in the far-famed school of John Kingsbury, was one of the fairest of all the fair daughters of Providence, celebrated as that city has ever been for its lovely girls. Her school education finished, she went with friends to Europe; not, however, before having given her youthful affections to a young man whom she had met in a sister city. Before marriage had consummated their happiness, adversity came upon him, and he found himself in no situation to marry. He was not willing she should waste her youth and glorious beauty in waiting through long years for the day to come when he could call her his own; so he released her from her vows and they parted; she going, as I said before, to Europe.

"There she met George Peabody, then, comparatively speaking, a

young man, but one who was already making his mark, and whose wealth was beginning to pour in from every side.

"He saw her, and was struck (as who that ever saw her, was not struck?) with her grace, her winning ways, her exceeding loveliness; and after a while he proposed marriage. Her heart still clung to her loved one across the wide Atlantic; but, after some time, she yielded, perhaps to the wishes of her friends, perhaps to the promptings of worldly ambitions;—who can fathom the heart of a young and beautiful maiden? She became the affianced wife of Mr. Peabody. After a little interval, she came back to this country, and soon after her arrival met her first love, and after-events justify me in saying, her 'only love.' At sight of him, all her former affection came back,—if indeed it had ever left her,—and Mr. Peabody, with his wealth and brilliant prospects, faded away; and she clung with fond affection to her American lover, willing to share a moderate income with the chosen of her heart. All was told to Mr. Peabody; and he, with the manliness which characterized all his actions, gave her up; and in due time she was married, and settled in a city not more than three hundred miles from Providence. What she suffered in coming to a final conclusion was known to but few. Her fair cheeks lost their roundness, and grew wan and pale; her lovely eyes had a mournful wistfulness that touched every heart. Some blamed her; others praised her; but the painful conflict was at length ended. Her womanhood vindicated itself, and she wavered no more.

"I well remember," the writer proceeds to add, "when in London, twenty-eight years ago, hearing all these facts talked over in a circle of American friends; and also at a brilliant dinner-party, given by General Cass, at Versailles, it was discussed in all its length and breadth. Whether, in his visits to this country, Mr. Peabody ever met his once affianced bride, I can not say; neither do I know whether, when she heard of his more than princely wealth, her heart ever gave a sigh at the thought, 'All this might have been mine.'"

In 1851, the Crystal Palace, in London, was opened for the first World's Fair. When the American exhibitors came with their various productions, to place them among those of other nations, they found that portion of the great building allotted to American industries bare and undecorated. The nations of Europe had made money appropriations and sent commissioners to fit up the arcades and galleries devoted to their wares with the taste and beauty appropriate to the place. But the American inventors and exhibitors had no appropriation from Congress, and often no means of their own. At this juncture George Peabody came opportunely forward, and supplied $15,000 to put the contributions of his native country in proper shape for exhibition, and gave them worthy surroundings in their niche in the great World's Palace. This is the first public gift of George Peabody of which I find any record; but from this time his charities rolled on, an ever increasing tide, until his death.

In 1852, Henry Grinnell gave one of his ships to Dr. Elisha Kane, to aid him in fitting out an expedition to go to the Arctic Regions in search of Sir John Franklin. To this enterprise, Peabody supplied $10,000; and this sum was increased by a donation from the Smithsonian Institute and one or two other societies, and made up the amount expended in that enterprise, which reflected so much honor on Dr. Kane and our country. Dr. Kane christened various portions of water and land discovered in this expedition by the names of his patrons. Mr. Grinnell and his sister, Mrs. Mary Minturn, and Mr. Peabody, were all remembered; and there is now a bay called Peabody Bay, and a point called Peabody Land, in the frozen regions which the adventurous Kane explored.

In the summer of 1852, the town of Danvers held its centennial celebration. The name of George Peabody had always been an honored one among his townsmen, and on this occasion they sent an invitation for him to be present with them on this memorial day.

Mr. Peabody could not leave London, but he sent a note regretting his inability to be there, and a sealed packet with this endorsement: "The seal of this is not to be broken till the toasts are being proposed by the chairman, at the dinner, 16th June, at Danvers, in commemoration of the one hundreth year since its severance from Salem."

On unsealing the letter, a draft for twenty thousand dollars was found inclosed, for the purpose of founding a town library and Lyceum Institute. The conditions of the gift were simply that half the sum should form a fund whose interest should be devoted to sustaining a course of free lectures; that $7,000 should be used in the erection of a proper building for a Lyceum Institute; and that all sectarian theology and political discussion should be excluded from the Institute. His letter closes with a request that Mr. Sylvester Procter, his earliest employer, should lay the corner-stone of the Institute, if he were living. The old man had before this been gathered to his fathers; but the request of Peabody shows one of his most marked characteristics —a disposition to remember and honor those with whom he was connected by ties of friendship or early association.

The Lyceum building at Danvers was at once begun, and named Peabody Institute, in honor of its founder. Long before its completion, however, it far outgrew its original design; and before the death of its founder, it had received upwards of $200,000 from him.

In the fall of 1856, nearly twenty years after his removal to London, Mr. Peabody visited this country for the first time since his departure. Invitations at once showered on him from all sources, and the highest public honors were proffered him in New York, Baltimore, Philadelphia, and Boston. But he refused them with a manly modesty, which was an unaffected trait of the man all through life, and would have no public reception, except the one offered him by his own town of Danvers.

During this visit to America, Mr. Peabody first announced his de-

sign of giving Baltimore an institution similar to the one he had given Danvers, on a grander and improved scale. The gift was to include a building which should be an architectural addition to the city, and a fund, secured by investment, which should furnish money to pay lecturers, purchase works of art, appliances for science, and any other purposes which its trustees think desirable. This building, also named for its founder, was finished in 1866, when Mr. Peabody was able to be present at the dedication. To this institution he gave one million dollars. Concerning it also he made the stipulation, that it should be free from all influences which would make it sectarian in conduct, or partisan in politics. His language, in making this condition, is so noble, that we can not forbear quoting from his letter to the trustees. He says: "My earnest wish to promote at all times a spirit of harmony and good-will in society, my aversion to intolerance, bigotry, and party rancor, and my enduring respect and love for the happy institutions of our prosperous republic, impel me to express the wish that the institute I have proposed to you shall always be strictly guarded against the possibility of being made a theater for the dissemination or discussion of sectarian theology or party politics; that it shall never lend its aid or influence to the propagation of opinions tending to create or encourage sectional jealousies in our happy country, or which may lead to the alienation of the people of one State or section of the Union from those of another; but that it shall be so conducted, through its whole career, as to teach political and religious charity, toleration and beneficence, and prove itself to be, in all conditions and contingencies, the true friend of our inestimable Union, of the salutary institutions of free government, and of liberty, regulated by law."

After his return to England in 1859, Mr. Peabody began to mature a scheme for the amelioration of the English poor. His philanthropic eye saw clearly that to establish institutes for intellectual culture in that great city, similar to those he had been founding in the United States, would be like giving a stone to those who were crying for bread. He, therefore, laid aside any wishes he may have had for the educational or literary improvement of the working-classes, and devoted himself to plans of material benevolence.

In 1862, he wrote to Sir Curtis Lampson, Lord Stanley, Sir James Emerson Tennant, Charles Francis Adams, and Mr. J. Morgan, constituting them a committee to carry out his designs. All these gentlemen were his intimate friends. Mr. Adams was then our minister in England; Sir Curtis Lampson was an American by birth, who had been knighted by the Queen; Lord Stanley and Sir James Tennant were both men of strong American sympathies, and Mr. Morgan was the esteemed partner of Mr. Peabody. In his letter to them, Mr. Peabody says:

"From a comparatively early period of my commercial life, I had resolved in my own mind that, should my labors be blessed with suc-

cess, I would devote a portion of the property thus acquired to promote the intellectual, moral, and physical welfare and comfort of my fellow-men, wherever, from circumstances or location, their claims upon me would be the stronger."

For this purpose, he informs this board of trustees, that he has placed at their disposal 150,000*l.* This sum he afterward increased till it reached 350,000*l.* before his death, and at his death bequeathed 150,000*l.* more, so that it was made half a million pounds sterling, or two millions and a half of dollars.

The manner in which the trustees of Mr. Peabody decided to carry out his wish, "to ameliorate the condition and augment the comfort of the poor," was the result of deep consideration. They concluded that the hard-working lower classes were much better subjects for improvement than the large mass of London paupers. Accordingly, they proposed to build large blocks or squares of houses, fitted up cleanly and comfortably, in which working men and their families could find comfortable homes, at a lower rent than they were obliged to pay in the loathsome tenement houses in which they lived.

The first site fixed upon was in Spitalfields, near the terminus of the Eastern Counties Railway. Afterwards lots were bought at Chelsea, Westminster, Islington, and Shadwell, each sufficient to form a large square, the smallest being over 13,000 square feet, and the largest about 73,000 square feet. These lots were situated in different parts of London, in districts where the great masses of working men lived.

On these sites, substantial brick buildings have been erected. Those in Islington and Spitalfields consist each of four detached blocks, five stories high, and let out in tenements of one, two, and three rooms, built around a large square. Those at Shadwell and Westminster are each three blocks, with one open side; but in all cases there is a large space, which is used as a play-ground by the children of the poor people who live in the buildings. In most of the blocks, the upper story is fitted up for a co-operative laundry, with wash-houses, baths, and all modern conveniences. Excellent ventilation and drainage are maintained throughout all these buildings; water from cisterns immediately under the roof is distributed to each tenant; great shafts, with voids from each tenement, are arranged to carry all refuse and rubbish to the cellar, from whence carts take it away daily. The rooms are small, on an average about nine feet by twelve, but they are very comfortably ventilated, and amply provided with cupboards, shelves, and other conveniences unusual in the houses of the London poor. It is said that the ample and airy play-ground, where the children can be allowed to play, safe from the carriages and carts that crowd the streets, is the most popular arrangement in the whole great enterprise, and that many a poor mother blesses George Peabody, since her child can have his free share of air and liberty, without danger of being run over and maimed for life by the heavy vehicles in the streets.

The rooms of the tenements have tiled floors and white-washed walls; and a family of six can hire three comfortable, well-lighted rooms for five dollars per month. This is about one-fifth lower than the rent of the damp, loathsome places which usually constitute the abodes of the class who now occupy Mr. Peabody's model houses.

Already it has been proved that the inmates of these houses show the results of their improved style of living, in improved health and morals. With a comfortable sitting-room, in which to spend his evenings, the father of the family no longer seeks the ale-house or gin-shop. Drunkenness and quarreling are rare among the inhabitants. According to the report of 1865, the total population of these houses was 1,971. They include almost every trade—laborers, porters, policemen, carmen, needle-women, and char-women, are the trades most largely represented, with an occasional blacksmith, carpenter, and machinist. It is to be hoped that such charities as those of George Peabody will be repeated, till every poor man in England, in America, in the whole civilized world, will have a clean, comfortable dwelling, with healthful surroundings. It need not be a charitable enterprise altogether, for, with judicious management, such buildings could be made self-supporting, and even remunerative to their founders.

The English people were enthusiastic in their expressions of gratitude to the great capitalist, who thus showed at once his good sense and his philanthropy. They would have loaded him with honors, if he had not kept aloof from all popular demonstration. A baronetcy was proffered him, but he refused it. Badges and insignia of rank of various sorts he declined in the same quiet way. London gave him the freedom of the city, and many institutions passed resolutions making him one of their honorary members. London resolved to place his statue in a public square, near the Royal Exchange, and selected Mr. Story, the American sculptor, to do the work. At the unveiling of the noble figure, the Prince of Wales presided. In his speech the prince said:

"It affords me the deepest gratification to pay a mark of honor and respect to the name of the great American citizen—the great philanthropist—I may say, the citizen of the world. England can never adequately pay the debt of gratitude she owes that man; London especially, to which his wonderful charity has been so liberally distributed."

Mr. Motley, then our American minister, made the closing speech, and, amid music and shouting, the statue was unveiled. It represents Mr. Peabody seated in an arm-chair, standing on a massive pedestal. The whole preserves most accurately and simply the form and features of the good man.

Before his last visit to America he was asked what recognition of his generosity to her people he would accept from the Queen of Eng-

land. He replied, "A letter from the Queen, which I can take with me to America, and deposit there as a memorial of one of her most faithful sons."

Shortly after this the following letter was sent Mr. Peabody, through Lord John Russell:

"WINDSOR CASTLE, March 28, 1866.

"The Queen hears that Mr. Peabody intends shortly to return to America; and she would be sorry that he should leave England without being assured by herself how deeply she appreciates the noble act, of more than princely munificence, by which he has sought to relieve the wants of her poorer subjects residing in London. It is an act, as the Queen believes, wholly without parallel; and which will carry its best reward in the consciousness of having contributed so largely to the assistance of those who can so little help themselves.

"The Queen would not, however, have been satisfied without giving Mr. Peabody some public mark of her sense of his munificence, and she would gladly have conferred upon him either a baronetcy or the Grand Cross of the order of Bath, but that she understands Mr. Peabody to feel himself debarred from accepting such distinctions. It only remains, therefore, for the Queen to give Mr. Peabody this assurance of her personal feeling, which she would further wish to mark by asking him to accept a miniature portrait of herself, which she will desire to have painted for him, and which, when finished, can either be sent to him in America, or given to him on the return, which she rejoices to hear he meditates, to the country which owes him so much."

The miniature of which she thus speaks was at once ordered, and on its completion was sent to Danvers, Mass. It was a half-length, enclosed in a massive gold frame, richly chased, the size about 14 inches long by 10 in width. It was at once deposited in the vault in Peabody Institute, which he had built to receive those acknowledgments of his gifts which he most highly valued. The contents of the vault are as follows: The miniature of the Queen, and her letter accompanying it; an autograph copy of the Queen's Journal, published by her in 1865; the gold box containing the freedom of London; a gold box from the Fishmongers' Association in London; a book of autographs collected by Mr. Peabody among his wide circle of distinguished acquaintances; a medal from the Congress of the United States; and several smaller souvenirs.

In 1866, Mr. Peabody visited America for the last time. As he grew old, and began to look upon his earthly race as almost run, he seems to have been drawn more and more to the home of his childhood. He felt, too, that not many more years of life, in the common course of humanity, could be his, and, wishing to direct his enormous wealth into the channels in which he wished it to flow, he

gave more and more lavishly to those institutions which were his favorite objects of charity.

To establish in Harvard College a museum and a professorship of Archæology and Ethnology, he gave $150,000. At the same time he gave Yale College the same amount for a museum of Natural History. The Essex Institute, in Salem, one of the best and noblest institutions for science in the United States, received $140,000 from Mr. Peabody's unfailing generosity. Never was generosity more wisely manifested than in this gift; and this Institute, in connection with the Peabody Academy for science, gives promise of unlimited future usefulness in the cause of science in this country.

Mr. Peabody remembered also the towns in New England where portions of his boyhood were spent. Revisiting Thetford, Vermont, the home of his grandfather, where he had spent his sixteenth year, he gave the village of Post Mills $5,000 for a village library, and to it a fine portrait of himself. To Newburyport he sent $15,000 for the enlargement and improvement of their city library, and gave them also his portrait to hang upon its walls. Of the little town in Massachusetts where his mother was born, and which, in 1839, had been called Georgetown in his honor, he said: "I should like to take each resident by the hand, for never in any visit there have I been annoyed by calls or letters, and not one of the citizens has in any way solicited help from me."

To Georgetown he gave a church, which he erected in memory of his mother, to whom he had been always a most loving and tender son. Mrs. Peabody used to relate of her son, that, as soon as he went into business in Baltimore, in 1822, he wrote her that he "should be able to supply the family with all the flour they needed." From that time to her death, George's care for his mother's wants increased with the growth of his prosperity. This church, dedicated to the mother whom he so loved and honored, is called "Memorial Church," and is a worthy monument to a mother's memory. He also remembered Georgetown with a town library and lyceum for free lectures.

To two other institutions of learning, Phillips Academy, in Andover, and Kenyon College, in Ohio, he gave respectively $25,000 and $20,000. In Kenyon College he became interested because his old and valued friend, Bishop McIlvaine, was president of the Institution. When Mr. Peabody was maturing his plans for the relief of the English poor, he consulted Bishop McIlvaine often upon the subject, and felt for him a most earnest and sincere friendship.

But the crowning munificence of this great philanthrophist was one of the last acts of his life, and one of the noblest. In a letter to the trustees of the Southern Educational Fund, he places at their disposal over two millions of dollars, to be devoted to the free education of the people of the South. In this letter he says:

"With my advancing years, my attachment to my native land has become more devoted; my hope and faith in its successful and glo-

rious future has grown brighter and stronger; and now, looking forward beyond my stay on earth, as may be permitted to one who has passed the limit of three-score and ten years, I see our country emerging from the clouds which surround her, taking a higher rank among the nations, and becoming richer and more powerful than ever before. But to make her prosperity more than superficial, her moral and intellectual development should keep pace with her material growth; and in those portions of our nation to which I have referred, the urgent and pressing needs of an impoverished people must, for some years, preclude them from making, by unaided effort, such advances in education and the diffusion of knowledge among all classes as every lover of his country must ardently desire.

"With the wish to discharge, so far as I am able, my own responsibility in this matter, I give you gentlemen, most of whom have been my personal and especial friends, the sum of one million, to be held in trust by you, and the income thereof used for the promotion and encouragement of intellectual, moral, or industrial education among the young of the more destitute portions of the South and South Western States of the Union."

To this amount he adds, in the letter, over a million more in state bonds, and the amount was increased by a bequest in his will, to almost two and a half millions. Of this trust, he proposed Robert Winthrop, of Massachusetts, as chairman; Governor Fish, of New York, and Bishop McIlvaine, as vice-chairmen; and General Grant, William Evarts, and his nephew, George Peabody Russell, were among the committee.

The words of this letter advocating the education of the South, and so effectually aiding to advance this cause, breathes the highest and noblest patriotism. Notwithstanding George Peabody's long residence in England, his affection and his interest were never alienated from home. All his words and deeds speak the noblest love for his country, and all his gifts tend to raise her higher and higher in the scale of intellectual development. He regretted our civil war as a terrible necessity, and his pity for the South, in which he had found home and friends in early business life, was sincerely expressed; but his devotion to the Union was unwavering. In his speech at the dedication of the Baltimore Peabody Institute, he said:

"My father bore arms in some of the darkest days of the Revolution, and from him and his example I learned to love and honor the Union. Born and educated in the North, living twenty years in the South, and finally in the course of a long residence abroad, being thrown in intimate contact with individuals of every section of our glorious land, I came—as do most Americans who live abroad—to love our country as a whole, to know no South, no North, no East, no West. And so I wish publicly to avow that, during the terrible contest through which the nation has passed, my sympathies were, and always will be, with the Union."

We have dwelt more at length upon George Peabody's patriotism, because an anecdote reflecting upon his loyalty had, some years ago, an extensive circulation. The story, truthfully told, is simply thus: After the first World's Fair in London, at the time when Mr. Peabody stepped forward to redeem the credit of his country, by contributing to place her products in honorable array beside those of European nations, Mr. Peabody was in the habit of celebrating the Fourth of July in London by giving a semi-public dinner, to which he invited all Americans visiting that city, with whom he had any acquaintance. All who bore letters of credit to him, he sought out and invited, and he also asked distinguished English men and women to be present on these occasions.

In 1854, some Americans proposed to have a public dinner on the Fourth of July, which should have something of a national character. Mr. Peabody entered into this idea with characteristic heartiness, asking that he might provide the dinner at his own expense, but leaving invitations and all other arrangements with the committee.

When the dinner was in progress, and the time for toasts had come, Mr. Peabody arose and said: "In deference to her sex, if not to her position, I shall propose the health of her Majesty, Queen Victoria." On this, a party of U. S. officials of subordinate rank, arose and flaunted out of the room, while James Buchanan, who afterwards had an opportunity to prove his loyalty, as President of the United States, when the civil war began in this country, and who was then American Minister to England, refused to rise in his seat, or to drink the toast. This harmless piece of gallantry to the leading lady in Europe made Mr. Peabody many bitter enemies to the day of his death.

In the summer of 1869, Mr. Peabody, still visiting in America, felt his health beginning to fail him. His physicians advised him to try a warmer climate, before the cold weather should set in. He began at once to make his arrangements to go to London, intending to go from thence to Italy to spend the winter. His last public appearance in America was on the occasion of the great Peace Jubilee, in Boston. He made his last visit to his friends and relatives in America, and engaged passage for England, in September. During this visit in his own land, he had divided about a million and a half among his relatives, who were principally nieces and nephews.

On his return to England, Col. Forney, of Philadelphia, sailed on the same ship with him, and he thus describes him in these latest days: "As I studied the figure of the venerable philanthropist yesterday, as he lay dozing on one of the sofas, in the forward saloon, I confessed I had never seen a nobler or more imposing figure. Never has human face spoken more humane emotions. His fine head, rivaling the best of the old aristocracy, and blending the ideals of benevolence and integrity; his tranquil and pleasing countenance and silver hair, crown a form of unusual dignity and grace."

On this last voyage to England, an incident occurred which is characteristic of Mr. Peabody. On the day the passengers were to leave the steamer, some resolutions were drawn up by them and presented to Mr. Peabody, testifying their respect and reverence for his philanthropy. One of these resolutions referred to the fact that Mr. Peabody had improved on the generosity of Girard and Smithson, who had bequeathed their benefaction to posterity after their deaths, while he had, during his life, given his wealth for the good of humanity.

Mr. Peabody immediately objected to this clause, and had the passage expunged. "Whatever may be said of me," he said modestly, "yet even the shadow of a contrast that might be construed into a criticism on those illustrious men should be avoided."

When Mr. Peabody reached London and began to make arrangements for his journey southward, his strength failed more and more, until he was obliged to admit the impossibility of travel. He went to the house of his intimate and esteemed friend, Sir Curtis Lampson, and there, Nov., 1869, he died. In his last moments a faithful clergyman from America, with whom he had once made a voyage, called, and was admitted to his death-chamber. Amid the prayers of this friend, the dying man gently murmured: "It is a great mystery, but I shall know all soon. Amen." And so his spirit passed away. As soon as the Atlantic cable flashed the news of his decease across the ocean, the country aroused to honor his memory. The Peabody and Baltimore Institutes; the Massachusetts Legislature; the Congress of the United States; all passed resolutions in his honor. In England the public sorrow was no less marked. It had been decided by himself that his remains should be laid by the side of his mother's body, in the tomb in Danvers, and thither he was to be borne. But in accordance with the general wish, his funeral service was pronounced in Westminster Abbey. Mr. Gladstone, the Earl of Clarendon, Earl Grey, and all the high officials of the city of London were among the mourners. The Bishop of the city preached his funeral sermon, and one of the archdeacons read the burial service.

From France, the voice of Victor Hugo came in sorrow for the loss of so good a man. His letter closes eloquently with these words: "His fatherland will guard his ashes, and our hearts his menory. The Free American Flag can never display stars enough above his coffin."

In the cemetery of Harmony Grove, between the towns of Salem and Danvers, (now only known as Peabody,) lie the earthly remains of this good man. Amid its cool and leafy shades, his dust lies peacefully. But the good he has done lives after him, and will yet speak for him, when future generations are enjoying the treasures of knowledge his bounty has provided for them.

"Farewell," says Robert Winthrop, in his address over his tomb, "farewell to thee, brave, honest, noble-hearted friend of mankind."

CT
104
R4

THE LIBRARY
UNIVERSITY OF CALIFORNIA
Santa Barbara

STACK COLLECTION

THIS BOOK IS DUE ON THE LAST DATE
STAMPED BELOW.

NOV 3 1965

DEC 1 1969

30m-8,'65(F6447s4)9482

UC SOUTHERN REGIONAL LIBRARY FACILITY
A 001 081 525 6